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FARM BOOKKEEPING.

BY

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LETTER OF TRANSMITTAL.

U. S. Department of Agriculture,
Bureau of Plant Industry,
Office of the Chief,
Washington, D. C., June 8, 1912.

Sir: I have the honor to transmit herewith and to recommend for publication as a Farmers' Bulletin a manuscript entitled "Farm Bookkeeping," prepared by Mr. Edward H. Thomson, Agriculturist, under the direction of the Agriculturist in Charge of the Office of Farm Management of this Bureau.

This paper has been prepared in response to numerous inquiries for information on the subject. It is believed that its publication will assist farmers in arriving at a better understanding of their farm business.

Respectfully,

B. T. Galloway,
Chief of Bureau.

Hon. James Wilson,
Secretary of Agriculture.

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FARM BOOKKEEPING.

INTRODUCTION.

The fact that there are 6,400,000 farmers in this country, each of whom is utilizing land, labor, and capital as a means of deriving an income, is sufficient reason for a brief discussion of the principles of farm bookkeeping.

Farming is a business the same as banking or running a department store. It is a business which involves the production and sale of several kinds of products. Two important points must be considered: (1) What does it cost to produce these products? (2) By selling at market prices, what profit is made on them?

The problem of the farmer is to meet conditions on his own farm in a way which will give him the greatest net returns for his labor and the use of his capital. He should receive interest on his capital as well as wages for his labor, but owing to the lack of proper records few farmers know what wages they actually receive. There is reason to believe that the majority of farmers are really living on the interest of their investments rather than on the profits of their farms.

A very large number of farm problems have been worked out in the experiences of farmers—far more, in fact, than have ever been worked out in any other way. There are some problems, however, which have not been thus solved. The problem of farm bookkeeping is one of these. One of the reasons for this is that what instruction the farmer has had on the subject has been misleading. As in the matter of architecture, so in bookkeeping the main work that has been done has related to city conditions and is not applicable to conditions on the farm. Hence it is that the problems of farm architecture and farm bookkeeping are not satisfactorily worked out. Those farmers who have tried to keep books have usually used systems devised by city bookkeepers who do not know the conditions to be met in keeping books on the farm. Even where the systems have been modified in the attempt to meet farm needs they have usually retained features of ordinary commercial bookkeeping that rendered them unsuited to the farmer's needs.

This bulletin is not an attempt to outline a system of bookkeeping for the farmer, for the time is not yet ripe for such an effort. It is rather a discussion of the principles which are applicable to accounts on the farm. It is believed that any farmer who studies this bulletin sufficiently to grasp these principles will be able to devise a system suited to his particular needs. Later, when satisfactory systems have been worked out and have been given thorough trial under farm conditions, other bulletins will be prepared outlining these systems. One such system is now being tried on a large number of farms with very gratifying results, but it has not been in use long enough to show what changes, if any, are needed to render it entirely practicable.

DIFFICULTIES OF FARM BOOKKEEPING.

There are several reasons why farm accounts are different from those of the city merchant, especially if one goes into much detail and follows out the records of the separate farm operations. The storekeeper deals with actual figures; that is, he knows definitely what each article costs him and what he receives for it. His records are not nearly so subject to estimates or to variation in values from time to time as is the case with the farmer. Farm records deal largely with estimated values, are influenced by particular conditions on the farm considered, and pertain not only to one enterprise but perhaps to a dozen. If a farmer had 160 acres of land and was selling nothing from it except corn and had no expenses except labor, the question of bookkeeping need not be considered; but when this same farmer with 160 acres is growing corn, potatoes, wheat, oats, hay, truck crops, and fruit, and is feeding some of these crops to cattle, horses, sheep, hogs, and poultry, there is urgent need of determining what each one of these lines is costing and is contributing to the net income of the farm.

One does not need a full set of double-entry accounts on all the farm enterprises to tell which cow is yielding the most profit; neither does one need such a set of accounts to determine the cost of labor on the farm. A few simple, rightly interpreted records oftentimes mean more to the farmer who is not used to bookkeeping than does a complete set of accounts carried out in commercial form.

TYPES OF FARM BOOKKEEPING

Farm bookkeeping may vary from the simple taking of an inventory once a year to a highly complex system of accounting, involving financial transactions, labor records, live-stock records, crop records, etc. The following outline gives three types of farm bookkeeping, varying from the simplest to the most complex.

Outline of types of bookkeeping applicable to farm conditions.

Type.	Records kept.	Results obtained.
I. Elementary	1. Inventories	1. Increase or decrease in capital, which shows personal gain or loss only.
II. Simple	1. Inventories 2. Financial accounts	1. Increase or decrease in capital. 2. Farm profit or loss. 3. Household and personal expenses. 4. Distribution of farm receipts and expenses. 5. Farmer's labor income.
III. Complex	1. Inventories 2. Financial accounts 3. Labor records 4. Live-stock records—Feed production. 5. Supplementary notes to Nos. 3 and 4.	1. Increase or decrease in capital. 2. Farm profit or loss. 3. Household and personal expenses. 4. Distribution of farm receipts and expenses. 5. Farmer's labor income. 6. Exact distribution of cost. 7. Exact distribution of income. 8. Cost income and profit of each group of live stock. 9. Cost income and profit of each field crop.

The first type includes only the farm inventories and is valuable as a means of showing one's gain or loss for the year. The second includes the inventories and the financial accounts. The results from these accounts are those which are most often used on the farm and which give one a clear understanding of the farm business as a whole. The third group includes all those in the first two, and, in addition, the labor, feed, and production records. This involves the whole subject of farm cost accounting, and if carried out in detail will give the actual as well as the relative cost and profit on the individual farm enterprises. Few farmers will want to keep all the accounts outlined in the last group.

SIMPLIFYING THE RECORD WORK.

A complete set of farm accounts is worth a great deal to any farmer, but it can not be expected that all farmers will keep them. The keeping of accounts takes time and is difficult in some respects, and they must be suited to each individual farm; that is, a system of records which will give good results on one farm will not necessarily prove satisfactory on another. The question is, How can the work in farm bookkeeping be so arranged that the records will be easy to keep and yet give the essential points that should be known at the end of the year? It is not those who keep the most records who derive the greatest benefit from them; for a few good accounts, rightly interpreted, mean much more than voluminous records. It is the quality and use of farm books that count rather than the number of them. To accomplish this purpose the rules of commercial bookkeeping may have to be modified and attention confined to such accounts as will best meet the farmer's needs. The following suggestions will assist in making the work easier:

(1) Consider as one unit all that may be termed real estate, as land, farm buildings, fences, ditches, etc., whether the farm is rented or owned by the operator.

(2) Do not consider that the farmer or his family receive anything for their labor unless they are paid in cash the same as hired labor. If there is a surplus at the end of the year, it is their compensation. In this way the accounts will not be confused with items not strictly cash.

(3) Farm products used by the household should not be credited to the farm in the cash account along with products sold, but should be taken care of separately.

WHAT ACCOUNTS TO KEEP.

The questions that always come up when starting out to keep farm records are: What does one wish to know about the farm as a whole or about the different things on the farm? Are the records to show only the net profit made in the year, or are they to include what each part of the farm cost and what each part returned? These questions must be decided by everyone intending to keep a set of farm accounts.

It is at this point that difficulty arises in keeping records, unless one has a clear idea of what he is intending to find out and then keeps such records as will give him that information. It is one thing to know what records should be kept, and an entirely different thing to know how to keep them. It is equally important to know what records should not be kept. This will be largely determined by the kind of farming that is followed. The simplest records are not always the most useful. Not to know clearly what accounts are essential has been the means of discouraging many attempts at farm bookkeeping. Many farmers seem to think that if they can get the proper books or forms they will be able to ascertain at the end of each year the exact financial conditions of their farms. This idea is entirely wrong. Any kind of a blank book will do, as it is the records that need to be considered. It is important, therefore, to know at the start what results can be obtained from certain records.

If only the total net gain or the net loss of the farmer (not the farm)[1] for the year is wanted, then but two records are needed. These two records are (1) a complete inventory of the farm business at the beginning of the year, and (2) another at the end of the year. The difference between these inventories gives the net increase or decrease in the farmer's wealth for the year. This difference will not correspond with the cash on hand or in bank, for much of the increase may be due to additional stock on hand or to unsold products. Furthermore, it does not take into account the farmer's personal and living expenses during the year, the money for which came from the farm income, nor the value of the supplies which the farm furnished to the family. These items will not be shown in the inventory at the end of the year,

[1] The farm may have made a handsome profit during the year and yet the farmer may be poorer than he was before by reason of having spent all the profit of the farm and more besides.

but the difference between the two inventories will show how much more or less one is worth than he was the year previous, exclusive of household and personal goods.

FARM INVENTORY.

The one most important record on any farm is the inventory. A large number of farmers keep a memorandum of cash transactions, including sales and expenses, but never once do they stop to determine the amount of their investments or how their money is invested. An inventory is a sort of guide or milepost, if it may be called such, which tells one where he stands each year. Without it he is absolutely unable to determine the profit or loss on the farm for the year or to determine his net worth.

What is a farm inventory, and what should it include? It is simply a statement showing what the land, buildings, equipment, live stock, and produce on hand are worth at the time the inventory is taken. It is a list of farm property and of farm debts. It should be itemized to show separately what the farm is worth, the value of each machine, the value of each group or head of live stock, the products for feed or for sale, the material or supplies on hand, and the cash on hand or in bank. It must also show all the bills which the farmer owes other people and which other people owe him.

Sample farm inventory: Farm of ———.

Property.	April 1, 1911.				April 1, 1912.			
	No.	Rate.	Valuation.		No.	Rate.	Valuation.	
REAL ESTATE.								
Farm of 180 acres (155 tillable), including buildings (dwelling $1,600, barns $1,800, other buildings $600), fences, and other improvements				$13,500.00				$13,500.00
LIVE STOCK.								
Dairy cattle:								
Cows, dry and in milk	24	$50.00	$1,200.00		26	$50.00	$1,300.00	
Bull	1	.....	50.00		1	.....	45.00	
Calves	6	14.00	84.00		8	15.00	120.00	
Two-year olds	4	28.00	112.00		6	20.00	120.00	
Total value of dairy cattle				1,446.00				1,585.00
Hogs:								
Brood sows	2	22.00	44.00		2	21.00	42.00	
Pigs	8	4.00	32.00		6	3.00	18.00	
Total value of hogs				76.00				60.00
Horses:								
Horse, Jim, 7 years old	1	.....	200.00		1	.....	180.00	
Team, Nell and Bess, 5 and 6 years old	1	.....	425.00		1	.....	425.00	
Team, Jack and Prince, 6 and 7 years old	1	.....	400.00		1	.....	400.00	
Colt, 1 year old	1	.....	75.00		1	.....	145.00	
Total value of horses				1,100.00				1,150.00

Sample Farm inventory: Farm of ———.—Continued.

Property.	April 1, 1911.				April 1, 1912.			
	No.	Rate.	Valuation.		No.	Rate.	Valuation.	
LIVE STOCK—continued.								
Poultry:								
Hens	160	$0.60	$96.00		125	$0.60	$75.00	
Roosters	5	1.00	5.00		4	1.00	4.00	
Turkeys	2	3.00	6.00		3	3.00	9.00	
Total value of poultry				$107.00				$88.00
Total value of live stock				2,729.00				2,883.00
MACHINERY AND TOOLS.								
Grain binder	1		90.00		1		82.00	
Sulky plows	2	45.00	90.00		2	41.00	82.00	
Disk harrow	2	28.00	56.00		2	25.00	50.00	
Mower	1		35.00		1		30.00	
Hay rake	1		20.00		1		19.00	
(List all items of farm machines, wagons, harness, and small tools.)								
Total investment in machinery and tools (not all listed here)				475.00				461.00
FEED AND SUPPLIES.								
Farm products:								
Corn, bushels	80	.60	48.00		125	.60	75.00	
Oats, do	200	.42	84.00		90	.50	45.00	
Potatoes, do	40	.75	30.00		80	.60	48.00	
Hay, timothy, tons	10	16.00	160.00		20	15.00	300.00	
Hay, mixed, do	5	12.00	60.00		4	12.00	48.00	
Silage, do	40	4.00	160.00		40	4.00	160.00	
Bran, do	½		15.00					
Mixed feed, do	1		31.00		2½	30.00	75.00	
Seed oats, bushels	30	.80	24.00		35	.80	28.00	
Seed potatoes, do	45	.80	36.00		50	1.00	50.00	
Seed corn, do	3	2.00	6.00		3	2.00	6.00	
Cement, sacks	4	.50	2.00					
Twine, pounds	20	.10	2.00		10	.10	1.00	
Total value of feed and supplies				658.00				836.00
BILLS RECEIVABLE.								
J. A. Brown, hay, tons	2	13.00	26.00					
R. S. Jones, potatoes, bushels	40	.50	20.00					
Total				46.00				
CASH.								
On hand			90.00				210.00	
In bank			580.00				1,938.00	
Total				670.00				2,148.00
BILLS PAYABLE.								
Farm mortgage				2,000.00				1,500.00
SUMMARY.								
Real estate			13,500.00				13,500.00	
Live stock			2,729.00				2,883.00	
Machinery and tools			475.00				461.00	
Feed and supplies			658.00				836.00	
Bills receivable			46.00					
Cash on hand and in bank			670.00				2,148.00	
Total investment				18,078.00				19,828.00
Bills payable				2,000.00				1,500.00
Net worth				16,078.00				18,328.00
Increase in inventory, $2,250.								

The foregoing form will give an idea of a farm inventory. It will be noted that the inventory is divided into seven parts or divisions. Such division is not absolutely necessary, but it is usually desirable to know how much of the total capital is in live stock, how much in machinery, etc.

The first division includes what is known as real estate. Under this heading is placed the land, buildings, fences, wood lots, and all items of that nature, which it is not desirable to itemize separately, for the farm is thought of as consisting of the land, buildings, and other permanent improvements. If it is sold all of these items are included. In placing the value on the farm, estimate so much per acre or else fix upon a lump sum.

The next division is live stock, where the different classes are entered separately—as horses, cattle, hogs, poultry, and the like. Each class is itemized as far as practicable. Thus, one can tell any year his total investment in horses or other classes of live stock. In taking this inventory each animal should be given a separate value or some method followed so that in taking the second inventory each class or individual can be recognized.

A third division in the inventory is the machinery and tools. This division contains the largest number of items to be listed, as this part of the equipment on a farm is always varied and consists of a large number of implements. In taking the inventory of the machinery and small tools, it is important to use care not to overlook any item, using the best judgment possible in placing the values on different articles. If certain machines are overlooked in one inventory and then included in the next it causes an inaccuracy in the records which could be easily avoided. If it is carefully taken and each item listed separately a machinery and small-tool inventory on a farm will fill several pages. If such detail is not desired, the minor tools of the value of less than $1 each may be grouped into a class together and a lump valuation given, but such a course is not advisable. It is surprising what a large number of these small tools there are on a farm and, furthermore, what a number are misplaced during the year. A carefully itemized inventory once a year is a help in locating the minor tools, and inventory day is a convenient time to call in all lent tools, which have a habit of changing owners if they remain too long away from home. All farmers know how easy it is to lose a hammer or an ax, but an old wagon never disappears. Circular No. 44 of the Bureau of Plant Industry, entitled "Minor Articles of Farm Equipment," gives a very complete list of small tools on a farm.

The fourth division of the inventory includes feed and supplies. Some of the items in this division are hard to estimate closely, as,

for instance, the number of tons of hay, straw, and other produce. Care must be used in listing the items to include all farm supplies, such as binding twine, fertilizers, machine oil, lumber, etc.

The fifth division consists of bills receivable, which should include all bills and accounts due the farm. Each account ought to be listed separately. Of course, these face values do not always represent real values, but each should be noted until it is either settled or proved to be worthless.

The sixth division of the items in an inventory consists of the amount of money on hand and in bank. This last item should be accurate in every detail.

The sum of these six divisions will be the total investment in the farm. This investment is not necessarily the net worth, for as yet the bills payable have not been deducted. So another division should be made, listing in it bills and accounts payable, the sum of which should be subtracted from the total investment to obtain the net worth. It must be understood that in this inventory no mention has been made of the household furnishings or personal articles, as only the farm and its accessories have been considered. It is true that the house has been included in the value of the farm, but this is necessary, as it is a part of the real estate and would be included if the place were sold. If a farm has two houses, the value of one not used for farm purposes need not be listed where the farm can be sold without it.

It will be noted in the inventory form shown that there is a place for the values on April 1 of one year and for a corresponding value of the same item the following year. This inventory form is only one of many which can be used, but it is presented because it has proved to be convenient and useful in taking farm inventories. In using an ordinary ruled book for this work it is well to have a separate page for each division of the inventory. For instance, on one page place the real estate and all items pertaining to it, on another the live stock, and so on. Then on another page bring together the totals for each of the different groups to give the total investment. By following this method space will be found for the new items that must be added to the inventory at the end of the year.

DETERMINING VALUES AND DEPRECIATION.

There are many opinions on the question of how farm values should be determined. It has been suggested that the value of a farm should be its original cost to the present owner, but the objection to this idea is that the present value may be much greater, or in exceptional cases much less, than the original cost. The increased value may be the result of labor and cash expended thereon in per-

manent improvements by the owner. Then again, the farm may have cost the present owner nothing, coming to him as a legacy. On the other hand, unusually high or speculative values should not be used, as they are likely to mislead and deceive even the owner. This danger of overvaluing the farm and other items must be carefully guarded against, as no benefit can come from it. In taking the farm inventory it is a good rule to place the values on all different items as nearly as possible at the amount for which they could be sold. This must not be construed to be the values that would be obtained at a forced sale, but those secured under normal conditions. This method of placing values on real estate, live stock, and machinery may seem unjust in that it is likely to give too low values to the different items. But the danger of placing values too low is not nearly as great as that of getting them too high and then finding at the end of the year that many items did not warrant such high valuations.

In the case of real estate the decrease in value due to natural depreciation is not nearly as great as on machinery. Few accurate data relating to the depreciation of buildings are available; furthermore, it is difficult to estimate such depreciation, and it will vary greatly in different regions. It would seem that a fair allowance for the depreciation of buildings is about 3 per cent. One's judgment must govern him in using the depreciation figures. It often happens that the increase in land values from year to year will more than offset the depreciation in buildings and other improvements. If this increase in land values is at a moderate rate it may be safe to assume that there has been no net loss on real estate through depreciation for that particular year. Furthermore, on well-managed farms the amount spent for repairs and for the maintenance of the buildings and fences is sufficient to keep them in nearly as good condition as they were at the beginning of the year. In other words, as soon as one stops repairing or keeping up buildings and fences the rate of depreciation is greatly accelerated. In the case of tile drains, which are a part of the farm, the depreciation is small, largely depending upon the quality of the tile and the care used in laying them and in keeping the outlets open. On farms in regions where the land values are not advancing, if there is a wood lot the annual increase in the growth of timber may offset any loss through depreciation.

In determining the values of the live stock, one should be governed by the market prices for the different classes. Inasmuch as the market varies from year to year it may be low one year and high the next, thereby decreasing or increasing the capital. It is impossible to overcome this variation, and a man's worth will fluctuate with the market values of what he owns. If no attention is

paid to market values it may be found that after a few years certain classes of property may have steadily declined in value, and if inventory values are not decreased accordingly a fictitious profit would be shown each year.

In valuing the machinery some problems may be encountered. It is well known that a machine depreciates in actual market value rapidly the first year used, or even the first few months used. That is, a mowing machine may sell new for $45, but let it be used a month, thereby making it second hand, and it will be difficult to obtain $35 for it. This is even more marked with other kinds of tools. The farmer buying new equipment during the year will find the market value of that equipment at the end of the year much less than the original cost. For the second and third year's use the market value of the machine may not appreciably decrease. In other words, a mower that has been in use three years will sell for almost as much as one that has been in use three months. The rate of depreciation on machinery has been variously estimated from 6 to 10 per cent. This rate, however, is affected by a large number of factors. Some farmers, who take care of their machinery, will make an implement last twice as long as others; on some farms the rate of depreciation must necessarily be low, while on others it will be high. Again, the rate of depreciation on certain machines is much greater than on others, and this factor needs to be taken into consideration.

Mr. Grant G. Hitchings, a practical New York farmer who has given much attention to bookkeeping, uses the following method in taking his machinery inventory: He deducts 10 per cent of the machinery investment and to the remainder adds the cost of the new implements purchased during the year. For instance, if his machinery was worth $425 at the beginning of the year and during the year a new mower and a horse rake were purchased for $70, the next year's inventory would be $452.50. This result is determined by deducting 10 per cent of $425, giving $382.50, then adding $70, the value of the new machines purchased. This method will undoubtedly not give a correct equipment inventory for certain years, but when used over a long period the values should be nearly correct. If it is found that this rate is too high or too low a new inventory can be taken any year and the total investment corrected. This method is a practical way of handling the depreciation on machinery, but is not recommended in farm cost-accounting investigations.

In determining the values of feeds and produce the farm price should be used. This price should be that at the nearest market less the cost of transportation to the station.

The best time to take an inventory varies in different parts of the country, depending upon the season and the business practice in the particular region. In the Northern and Eastern States perhaps the best date is March 1 or April 1; in the South an earlier date might fit very well. In the Central States, March 1 is undoubtedly the best time, because all farm business transactions in that region date from that day, while in the eastern part of the country the farmers' day of reckoning is April 1. This ordinarily corresponds with the date on which tenants change farms. On fruit farms, truck farms, and the like, January 1 is satisfactory; on poultry farms September 1 or October 1 is a good date, because the new poultry year usually starts at the time that the hens are placed in winter quarters. The most convenient time for taking the annual inventory thus varies with conditions.

Upon completing the first inventory the most important of the year's records is finished, for without this inventory one has no basis on which to build future records and is at a loss to know whether he is gaining or losing, while with a good, clear inventory of all his property he is prepared to keep such other records as will give him the information he desires at the end of the year.

CASH ACCOUNTS.

In starting to keep a record of the cash items it is of the utmost importance to know definitely just what records are wanted.

In order to make the cash account balance, i. e., to correspond with the cash on hand or in bank, one needs to have an account of all expenses. Inasmuch as the household items are usually bought along with the farm items, they must necessarily be included in the records. However, the reason for keeping a record of household accounts along with those of the farm is to keep the books in balance. They add work to farm bookkeeping and are not a part of the real farm records. By an examination of the account books of eight farms it was found that of all the cash transactions recorded the items pertaining strictly to the farm formed 54.6 per cent, the personal items formed 22.1 per cent, and household items 23.3 per cent. The average number of cash items entered on the books was 577, and of this number only 315 were farm items. It would seem best not to keep the household accounts in detail, but to combine all the household items for each day into one entry, unless the housekeeper wishes to so keep them as to know how much of each article is used. All the items pertaining in any way to the farm business should be itemized carefully.

A blank form well adapted for handling these cash items is known as a daybook form and consists of a plain ruled page similar to that in most books designed for bookkeeping. The right-hand

column is used for totals and the column to the left of it for the different items. This form is very simple and can usually be obtained at any stationery store. There are various other forms, many of which are useful and possibly better than the one here described, but farm bookkeeping is not a question of forms; it is a question of what records to keep and how to use them. The most carefully devised bookkeeping blanks will not give good farm records unless the person doing the work has a clear idea of the purpose of the records.

Of the several ways of keeping cash accounts, three will be briefly discussed. A method commonly used by farmers is to enter "Receipts" on one page and "Expenditures" on another. Under one head place all items bought and under the other all items sold, as stock, crops, and other products.

One method of keeping cash receipts and expenditures.

RECEIPTS.

1911.				
April	2	20 bushels potatoes, at .60	$12.00	
	2	18 dozen eggs, at .21	3.78	
	7	2 tons hay, at 16.00	32.00	
	7	1 cow to J. Brown	47.50	
	7	30 dozen eggs, at .20	6.00	
	7	3 bushels seed potatoes, at 1.00	3.00	$104.28

EXPENDITURES.

1911.				
April	2	1 ton cottonseed meal for dairy	$35.00	
	2	Strap for work harness	.35	
	2	Personal	2.25	
	2	Household	1.60	
	7	Garden seeds	8.00	
	7	Express on seeds	.85	
	7	2 milk pails	2.00	
	7	Household	.86	
	7	Repairing plow	1.20	$52.11

For a simple, easy scheme of bookkeeping such a record is very satisfactory and if followed out to the end of the year will give all business transactions. But if one wishes to know the aggregate income from the sale of eggs or of milk, it will be necessary to go through the records and pick out all these items and add them separately. In other words, such a record gives the total receipts but does not classify them. In order to ascertain what each enterprise returns to the farm it is necessary to classify all records under their respective headings. This operation, known as posting the original entries, is nothing more than classifying the items under their respective heads. The totals of these separate accounts can then be added to give the receipts for the year.

Below is illustrated the total cash receipts and cash expenditures for a farm and the distribution of the same. A further discussion of what constitutes farm receipts and farm expenditures will be given later.

Statement showing summary of cash receipts and expenditures on a farm for the year.

RECEIPTS.

	Milk	$2,800.00	
	Apples	180.00	
	Potatoes	1,100.00	
	Hay	190.00	
	Cattle	145.00	
	Eggs	174.00	
	Poultry	26.00	
	Wood	40.00	
	Bills receivable (collected)	46.00	
			$4,701.00

EXPENDITURES.

	Labor	$800.00	
	Feed purchased	480.00	
	Fertilizer	125.00	
	Seed	70.00	
	Lumber for building	50.00	
	Miscellaneous farm	180.00	
	Household	420.00	
	Personal	148.00	
	Thrashing	42.00	
	Cattle purchased	175.00	
	Taxes	133.00	
	Interest on debt	100.00	
	Debt (paid)	500.00	
			$3,223.00

The second method of handling the cash transactions is to make the original entry direct upon its account; that is, instead of putting all the different items down one after another on one page, to classify them as they are entered in the book.

Cash items entered direct to their respective accounts.

DAIRY.

1911.			Received.	
April	9	2 cows to C. Brown	$88.00	
	9	1 yearling to Smith	19.00	
	15	Milk and cream	114.25	$221.25

DAIRY.

1911.			Paid.	
April	2	1 ton cottonseed meal	$35.00	
	2	2 milk pails	2.00	
	10	1 cow from A. Johnson	57.50	
	10	One-half ton bran	15.50	$110.00

By this method all items pertaining to the sale of milk and dairy products will be put under "Dairy," all items for the sale of eggs and poultry will come under "Poultry," etc. This is known as entering accounts direct to the ledger or, as it is sometimes called, a classified daybook. This system has proved satisfactory with many farmers.

The third method is that illustrated below and is similar in principle to the second method, the difference being that as all the accounts appear on two pages it is an easy matter to ascertain the totals and to balance the cash account. Unless a wide blank is used it does not admit of many accounts, but on most farms only a few are needed.

Form illustrating special-column cashbook; items entered direct to separate accounts.

RECEIPTS.

1911.		Item.	Dairy.	Poultry.	Crops.	General.
April	2	2 yearlings to Jones	$35.00			
	3	2 tons of hay to Brown			$32.00	
	4	14 dozen eggs, at 25 cents		$3.50		

EXPENDITURES.

1911.		Item.	Dairy.	Poultry.	Crops.	General.
April	2	1 ton wheat bran	$28.00			
	2	10 bushels seed oats, at $1			$10.00	
	7	2 bags chicken wheat		$2.50		

This special-column cashbook can also be used in taking account of the expenditures, listing them under several headings, as "Live stock," "Crop," "Household," "Personal," and "General" expenses, care being taken to exclude anything which is not actually a cash transaction. By keeping the records in this way one will be able to balance his cash with the totals as shown by the accounts, but if items not cash are included in any of these accounts it will be difficult to make the records balance. In the following form some suggestions are given for keeping the cash transactions. The most detailed records are not usually the best records.

Illustration of desirable and undesirable detail in entry of household and personal items; also of complete and incomplete detail in entry of items pertaining to the farm.

COMPLETE AND DESIRABLE.

1911.		Item.	Received.	Paid.
Sept.	29	Coal for thrashing, three-fourths ton, at $4		$3.00
		Household expense		.89
	30	Sold 2 tons hay of this year's crop, at $15	$30.00	
		Personal expense		2.55

Illustration of desirable and undesirable detail in entry of household and personal items; also of complete and incomplete detail in entry of items pertaining to the farm—Cont'd.

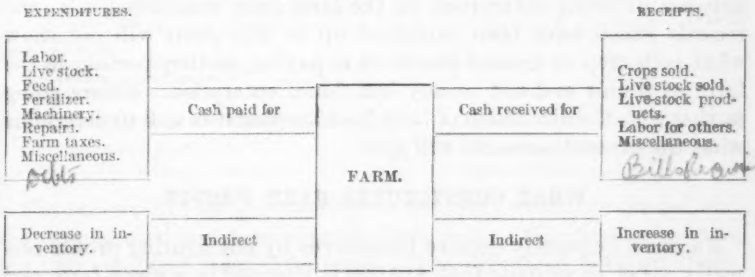
INCOMPLETE AND UNDESIRABLE.

1911.		Item.	Received.	Paid.
Sept.	29	Coal		$3.00
		2½ pounds steak		.45
		Bread		.20
		3 pounds rice, at 8 cents		.24
	30	Hay	$30.00	
		Cravat		.25
		Shoes		2.00
		Candy and peanuts		.20

FARM RECEIPTS.

It may be well at this point to state definitely what constitute farm receipts. This can best be made clear by the use of the following diagram:

Diagram of farm receipts and expenditures.



Here the farm is considered as a unit, and the money received for everything which goes off the farm represents a farm receipt. The money paid for everything which comes to the farm from outside represents an expenditure. There is one other receipt which the foregoing rule does not cover, i. e., the increased inventory. A farmer may work on his own place, such as building a barn or putting in tile ditching, and thereby greatly increase the value of his farm. This increase represents a receipt just the same as crops or stock sold, but it is received indirectly. The only place where this receipt will come into the accounts will be the inventory. To make this point still clearer, all the items representing farm receipts are grouped into six divisions, as follows:

1. Crops sold from the farm.
2. Live stock sold from the farm.
3. Stock products sold from the farm.
4. Money received for labor for others, such as teaming or hauling.
5. Miscellaneous (old machinery or supplies).
6. Increased inventory or increased investment in the farm.

The total of these items constitutes the farm receipts for the year, exclusive of what the farm furnishes toward the owner's living.

FARM EXPENDITURES.

It is well to outline what constitute farm expenditures. The same rule holds true here as with the farm receipts, i. e., nothing not paid for in cash represents a farm expenditure, except a decreased inventory. This decreased inventory is likewise taken care of by the difference in the inventories at the beginning and at the end of the year. Often records are found which give such items as this: "One horse died, value $100." This item has been added in with other farm expenditures, when in reality it is not an expenditure at all. True, it is a loss, but this loss will be shown by the live-stock inventory at the end of the year.

In this discussion the farm has been considered as a unit in its relation to the outside world and in no case has the relation existing between different enterprises on the farm been considered, i. e., the records which have been explained up to this point will not show what each crop or class of live stock is paying, as they pertain to the farm as a unit and not to any individual enterprise. Before going farther with the discussion of farm bookkeeping it is well to determine what the present accounts will give.

WHAT CONSTITUTES FARM PROFIT.

Farmers frequently deceive themselves by not figuring profits correctly. Let us suppose that $12,000 is invested in a given farm and its equipment and that the current rate of interest on farm loans is 5 per cent. Now, if this $12,000 were loaned out at this rate it would bring a revenue of $600 a year. Hence, the first $600 of net income represents the interest on the investment and not a profit on the operation of the farm. Let us further suppose that the unpaid family labor is worth $200 and the owner's time and managerial ability is valued at $400. Then the next $600 of net income represents wages, not profit. In the case here supposed the net income would have to exceed $1,200 before there is any real profit.

To determine the actual profit a farm has made during the year, the following accounts are necessary:

(1) Two inventories, one at the beginning, the other at end of the year.
(2) The totals of the personal and household expenses during the year.
(3) The interest paid on indebtedness during the year.
(4) The value of the supplies furnished by the farm toward the living of the farmer and his family.

Statement showing a method of determining the farm profit.

Item.	April 1, 1911.	April 1, 1912.
Farm inventory:		
Real estate	$13,500.00	$13,500.00
Live stock	2,729.00	2,883.00
Machinery and tools	475.00	461.00
Feed and supplies	658.00	836.00
Bills receivable	46.00	
Cash on hand and in bank	670.00	2,148.00
Total farm investment	18,078.00	19,828.00
Bills payable	2,000.00	1,500.00
Net worth each year	16,078.00	18,328.00
Increase in net worth		2,250.00
Cash account:		
Personal expenses	148.00	
Household expenses	420.00	
Interest on mortgage of $2,000	100.00	
Total money paid out for other than farm expenses during year		668.00
Supplies and rent:		
Supplies furnished by farm to owner	120.00	
Rent of farmhouse (its value to owner)	180.00	
Total supplies and house rent		300.00
Total farm gain		3,218.00
Interest and labor:		
Interest on average of total farm investment of $18,953, at 5 per cent	947.65	
Unpaid family labor (estimated)	300.00	
Owner's labor (estimated)	480.00	
Total interest on investment, etc		1,727.65
Actual farm profit		1,490.35

The statement just presented gives the items which are needed and the method used in determining the farm profit. The first part shows the two complete farm inventories. The difference between them, which is $2,250, represents the increase in net worth exclusive of household and personal goods. This increase includes the farm gain from the growth of live stock, the amount of unsold produce, etc. During the year the farmer paid out of the funds received from the sale of farm products $148 for personal expenses, $420 for household expenses, and $100 interest on the mortgage of $2,000, making a total of $668 paid for other than farm expenses. The owner also received from the farm milk, butter, eggs, and garden produce, the total value of which for the year is estimated at $120. The rental value of the farmhouse to the owner must be counted as a farm receipt and has been estimated at $180. The house has been included in the farm investment, and, as interest is charged on the total investment, the farm should be credited with the value of this house rent. The $2,250 increase in net worth plus the $668 paid out for other than farm expenses plus $300, the value of the supplies and rent furnished by the farm, constitute $3,218, the total farm gain.

The farmer had invested $18,078 the first year and $19,828 the second year, or an average of $18,953. This investment should pay

him a fair rate of interest before he can count any profits. Assuming the rate of interest to be 5 per cent per annum, the interest charge is $947.65; deducting this charge from the farm gain leaves $2,270.35, which represents the amount that the farmer and his family made during the year. The owner's family, who did some work on the place during the year, were not paid in cash, and the value of their labor should be deducted before showing profits. In this instance it is estimated at $300; subtracting this estimate from the $2,270.35 leaves $1,970.35, which amount can be called the farmer's labor income, or the amount of money that he earned on the farm during the year after all expenses except his own labor were deducted. To find the net farm profit the owner must be paid for his own labor, which in this case is estimated at $480 for the year. This sum deducted from $1,970.35 gives a farm profit of $1,490.35. The last item, and no other, is the actual farm profit.

Many farmers would be better off financially if they sold their farms, loaned their money at 5 per cent, and hired themselves out at current wages. This statement is not made with the idea that every farmer who is not making 5 per cent interest on his money should discontinue farming, but in the hope that it will induce farmers to determine the financial status of their business.

Thus far the account deals only with the inventory and with cash transactions. From these accounts the farm profit or loss and the distribution of the receipts and expenses can be determined. But such records do not tell the best paying crops or the best classes of live stock. The next step is to consider those records of the different farm enterprises that enable the farmer to determine whether potatoes or corn should be grown and whether hogs or cattle should be kept. For this purpose other records are needed in addition to those already described. The most important of these is the labor record.

LABOR RECORDS.

Farm labor records are equally as important as cash records, for in no industry at the present time is labor so inefficiently used as in farming. This statement may seem somewhat unwarranted, inasmuch as the farmer is considered as hard-working and as receiving small pay for his labor. It is true that a great many farmers work long hours and at hard physical labor, but it is not necessarily true that they work efficiently all the time and at work which is returning them a fair wage. Of the 6,400,000 farmers in this country not many of them can tell how many hours of labor it takes to produce a bushel of wheat or a bushel of corn and whether corn or wheat in that particular locality returns them the best wages for each hour worked. Yet when a farmer's work is almost entirely on a few important crops

or classes of live stock should he not know something about the distribution of his labor and what each part is paying him?

Labor records require some time and careful attention, for in no other business does a man work at so many different things as on a farm. He is continually going from one kind of work to another, perhaps spending only a few minutes on each, and especially is this true on the smaller sized farm. Then, again, many operations on the farm can not be directly charged to any particular crop or class of stock, as, for instance, chores or general farm work. If it were all uninterrupted work on some particular crop or definite enterprise the labor records would be a simple matter. The miscellaneous odds and ends of work on the farm cause much loss of time and greatly increase the cost of the really productive enterprises. The labor record is the first step which has to deal with the profit or loss on the separate enterprises within the farm. This labor consists of two kinds, man and horse, each of which must be accounted for. In the following statement are shown the average hours that regular farm laborers on certain farms worked during the different months in the year:

Daily average of hours of labor of regular farm workers, by months, for one year.

1910.	1.—New England dairy farm.		2.—Iowa grain and stock farm.	
	Week days.	Sundays.	Week days.	Sundays.
	Hours.	*Hours.*	*Hours.*	*Hours.*
January	11.4	*7.2	10.8	5.9
February	11.7	*7.3	11.3	4.9
March	11.4	5.1	12.3	4.8
April	12.2	5.3	12.2	4.7
May	11.9	4.4	12.3	3.6
June	11.9	3.7	12.7	3.3
July	11.8	3.6	12.6	3.1
August	11.3	3.3	12.6	3.2
September	11.2	4.0	11.8	2.7
October	11.5	3.5	12.3	2.9
November	10.3	4.9	12.2	3.3
December	9.7	4.3	12.4	*8.2
Yearly average	11.35	4.5	12.1	3.9

*During these months only one regular worker was employed, the Sunday work being done by him and the owner. All other months from two to three regular workers were employed.

Figure 1 shows the average monthly cost per hour of man labor on the dairy farm, this rate being determined by dividing the total cost of labor for the particular month by the total hours worked by paid labor during that month. The high cost of labor in September is due to extra labor for silo filling and thrashing. It is commonly supposed that labor costs more in the summer than it does in the winter, but actual records seem to show that on most farms an hour of labor costs more in winter than it does in summer. This fact is

accounted for by the greater length of the working days during the summer.

Figure 2 shows for farm No. 2 the average hours that the farm horses worked on week days during the different months in the year. The average per day for the year was 3.6 hours. There is an enormous waste of labor when the average farm horse in this country is used only 3½ hours a day during the year. It is true that some farmers utilize horse labor more effectively, but our investigations indicate that about 3½ hours a day is the average for the Northern States. These illustrations are given here simply to show the importance of labor records.

There are several methods of keeping labor records, no one of which can be used on all types of farms. Some farmers will find one method easy and satisfactory, while others will find the same method difficult.

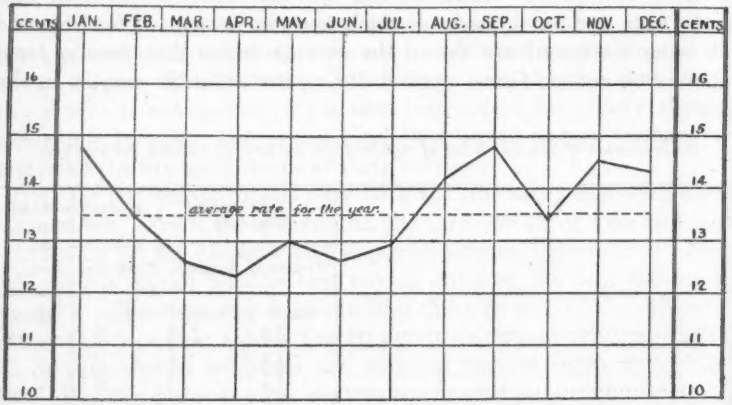


FIG. 1.—Curve showing the actual monthly cost per hour of farm labor on a New England dairy farm in 1910.

For instance, a system of labor records which proves useful on a dairy farm might be totally impracticable on a fruit farm. There are two principal methods of keeping labor records. The first is simply to note the total hours put on each enterprise daily. The second is to itemize all the labor, so that the total hours spent in doing each separate operation on each of the different enterprises can be ascertained. The first method is easier and simpler and for most purposes is quite satisfactory; but for careful study and complete analyses of the costs detailed labor records are needed, and this necessitates using the second method.

Figure 3 illustrates a modification of the Roberts system of labor records. One sheet serves for a month. The different enterprises are written across the top of the page and the dates down the left-

hand margin, each column being divided into two parts for man hours and horse hours, respectively. At the end of the month the total amount of labor spent on each enterprise can be determined and posted to another book. This form of labor record is easy to keep and is useful, as it gives the total hours spent on the different enterprises for the year.

Figure 4 illustrates a form used where the labor records are carried out to the utmost detail. It contemplates that each laborer or some one for him shall make out a daily report similar to the one shown. This method of keeping labor records involves a great deal of work, but for cost-accounting investigations it is practically necessary to use some such system. The form illustrated was designed by Mr. W. A. Peck while connected with the United States Department of

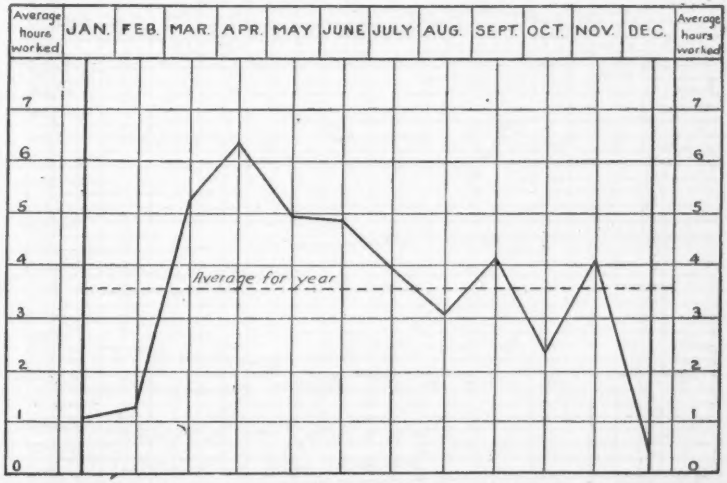


FIG. 2.—Curve showing the average hours of work per day per farm work horse on a 320-acre grain and stock farm in Iowa.

Agriculture. It is designed to meet the needs of the investigator, and goes into greater detail than the average farmer would wish.

Another method has been found useful on some farms. An ordinary ruled book can be used with the headings of different enterprises written in at the top of the pages, similar to the forms illustrated on page 18. Under each heading is noted the amount of labor spent on that particular crop for that day. This method gives at the end of the season a complete record of the labor on each enterprise. From such a labor record the labor costs can be determined.

All labor records should be in terms of hours. Keeping them by days is not satisfactory. The statement of the average hours worked

daily shows that the length of the working day varies greatly. Given the total amount spent for labor, which should include wages, board, room, and other privileges, the actual cost per hour can be easily determined by dividing the total cost of labor by the total number of hours of labor performed.

To determine the cost of horse labor, one must know the approximate cost of keeping the horse during different periods of the year. Cost-accounting records show that the cost of horse labor varies from 6 to 16 cents an hour. The rate depends on the number of horses kept, the cost of keeping them, and the average number of hours' work done per day. On most farms the amount of work done by

MONTHLY WORK REPORT

MONTH OF June 1911

	Corn		Wheat		Oats		Mixed		Hay								Horses		Cattle		Hogs		Misc.		Total	
	Man	Horse	Man	Horse	Man	Horse	Man	Horse	Man	Horse	Man	Horse	Man	Horse	Man	Horse	Man	Horse	Man	Horse	Man	Horse	Man	Horse	Man	Horse
1	5	10					20	40									1½		5½		1				33	50
2	10	20					10	20									2		8	2	2½		2	2	34½	44
3	9	18					9½	19									1½		6½		1		4½	1	32	38
Sunday 4																	3½		5½		1½			4	10½	4
5																										
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FIG. 3.—Illustration of a form of monthly labor-report blank.

horses is much greater at some seasons than at others. In such cases the cost per hour of horse labor varies greatly from month to month. The best plan is to determine the average for the year and use the result in figuring costs.

RECORDS OF SEPARATE FARM ENTERPRISES.

The preceding pages have been devoted to the consideration of those accounts involving the receipt and expenditure of cash and to the usefulness of and methods of keeping labor records. Labor records are necessary in finding the cost of various farm crops and other farm enterprises, but labor is not the only item that enters into the cost of an enterprise. Hence, if the farmer is to know the actual

profit (or loss) from each crop grown or each lot of stock fed, he must keep other records. If farming were simply growing corn, raising wheat, or keeping a dairy, a separate record of each enterprise would

Form A.

Regular Worker's Daily Time Sheet.

U. S. Department of Agriculture in cooperation with Frank Smith

Day of Week: Monday Date July 10 1911

	KIND OF WORK. Include implements used, number of loads, etc.	FIELD.	MAN HOURS.	HORSE. NO.	HORSE. HOURS.
4.30					
5.00					
5.30	milking & care of cows		1		
6.00	Breakfast				
6.30					
7.00	Take milk to depot		1½	1	1½
7.30					
8.00					
8.30					
9.00					
9.30	Plowing Corn	J	4	1	4
10.00					
10.30					
11.00					
11.30					
12.00					
12.30	Dinner				
1.00					
1.30					
2.00	Hauling hay	B			
2.30	working with Mr. Smith		4½	2	9
3.00					
3.30	Hauled in 4 loads				
4.00	about 1 ton each				
4.30					
5.00					
5.30	care of team		½		
6.00	Supper				
6.30	milking		½		
7.00					
7.30					
8.00					
	WORKMAN O. Neal	TOTAL HOURS	12		14½
	REMARKS Need rain. Corn suffering. Hay short.		REPORT O. K.		

8–31

FIG. 4.—Illustration of a desirable form for detailed farm-labor records.

not be needed in order to learn the source of profit or the cause of loss; but farming is generally more or less diversified, the income being received from several sources. These sources may be hogs,

cattle, poultry, fruit, wheat, hay, potatoes, truck crops, and the like. It is necessary to know what each of these enterprises returns for the expenditures made upon it, if the farm is to be conducted in a businesslike manner. The cost, income, and profit of a field of corn is given in Table I.

TABLE I.—*Account with a crop of corn in field B (36.48 acres) on an Iowa farm, 1910.*[1]

Items of statement.	Date.	Total—			Per acre—			Per bushel.
		Man hours.[2]	Horse hours.[2]	Cost.	Man hours.[2]	Horse hours.[2]	Cost.	
Plowing, fall of 1909 (14-inch gang).	Mar. 25 to Apr. 2	85½	342	$46.48	2.34	9.38	$1.279	.....
Disking	Apr. 7 to 29	90½	361	49.28	2.47	9.89	1.351	.....
Harrowing	Apr. 29 to May 4	25½	51	8.56	.70	1.40	.235	.....
Planting (with planter)	Apr. 30 to May 5	30½	61	10.25	.84	1.67	.281	.....
Harrowing (after planting).	May 10 to 14	33¾	72½	11.86	.92	1.99	.325	.....
Cultivating (first time).	May 27 to 30	58	116	19.49	1.59	3.18	.534	.....
Cultivating (second time).	June 3 to 6	54½	109	18.31	1.49	2.99	.502	.....
Cultivating (third time).	June 14 to 18	51½	103	17.31	1.41	2.82	.474	.....
Cultivating (fourth time).	June 23 to July 5	57	114	19.15	1.56	3.12	.525	.....
Picking seed corn	Sept. 27 to Oct. 7	59	.....	7.44	1.62	.....	.204	.....
Husking (from standing stalks).	Nov. 2 to 22	305½	611	102.65	8.38	16.75	2.814	.....
Total labor cost		851	1,940½	310.98	23.32	53.19	8.524	..
Manure charge		.....	.....	124.91	.....	.....	3.424	.....
Seed, 5½ bushels, at $5.		.....	.....	27.50	.....	.....	.754	.....
General expense		.....	.....	18.24	.....	.....	.500	.....
Equipment		.....	.....	23.27	.....	.....	.638	.....
Taxes		.....	.....	25.53	.....	.....	.700	.....
Interest (rent)		.....	.....	255.35	.....	.....	7.000	.....
Total cost		.....	.....	785.78	.....	.....	21.54	.....
Summary:								
Income[3]		.....	.....	1,127.36	.....	.....	30.90	$0.512
Cost		.....	.....	785.78	.....	.....	21.54	.357
Profit		.....	.....	341.58	.....	.....	9.36	.155

[1] Previous crop: Timothy for seed, 1909.
[2] Rates per hour: Man hours, 12.6 cents; horse hours, 10.5 cents.
[3] Yield: 2,200 bushels of grain, at 50 cents (average, 60.3 bushels per acre), $1,100; stalks, $27.36; total, $1,127.36.

The figures in this table are taken from records of actual experience. The number of hours of man and horse labor is given for each operation, such as plowing, disking, etc. The cost of man labor was determined as stated on page 23. The value of the owner's labor and of family labor was counted at the same rate as for the regular workmen, although it was not paid for in money. The cost of the horse labor was determined by taking the total hours that the farm horses worked during the year and dividing it into the total cost of keeping these horses for the year. The rates for man and horse labor are the actual rates found on that particular farm for that year. When records sufficient to determine the actual cost of horse labor are not

at hand, the next best plan is to assume a cost based upon such data as can be had.

In addition to the labor cost the table shows certain other charges against the crop, namely, the cost of seed, the value of manure used (only part of which is charged to the corn crop, the remainder being charged to later crops), the use of implements and machinery, general expenses, taxes, and land rental or interest on the investment in land. The total of all these charges gives the total cost of growing the corn up to the time it is put in the crib. The equipment cost, or the charge for the use of machinery, is difficult to determine accurately. In this illustration the equipment charge was arrived at through carefully kept records relating to the investment in, repairs of, and depreciation of the implements used in growing the crop. It is not expected that many farmers will work out these equipment charges in such detail, as it is not necessary in determining the approximate cost. A good plan for the farmer to follow in this matter is to use average figures for the acre cost of each of the machines or implements used, such as are given in Bulletin 73 of the Bureau of Statistics, entitled "The Cost of Producing Minnesota Farm Products, 1902–1907," and Bulletin 212 of the Bureau of Plant Industry, entitled "A Study of Farm Equipment in Ohio." [1]

Another way of arriving at the machinery cost per acre is to estimate the annual cost (depreciation, repairs, and interest) of each implement and to divide this estimate by the number of acres on which the machine is used during the year. Thus, if a plow cost $12 and the depreciation is 10 per cent ($1.20) a year, the repairs $1 (including sharpening), and the interest (at 5 per cent on the average value of $6 for its estimated life period of 10 years) 30 cents, the total cost of the plow per year is $2.50.

Now, if this plow is used on 50 acres during the year, the acre cost is 5 cents. But if the plow is used on only 10 acres, then the acre cost becomes 25 cents. This estimate does not allow for the slight increase in the items of repair and depreciation where the machine is used on the larger acreage, but these charges do not increase in direct proportion to the acreage covered.

The rental value of the land is also a difficult charge to determine, inasmuch as it depends on the value of the land and on current rates of interest. Some parts of the farm are more fertile than others and hence are worth more. The most accurate method of determining the charge for land rental is to place a definite valuation on the land in each field of the farm and then fix the rental value at a sum equal to the interest on that value. The rental or interest

[1] Application for either of these bulletins should be addressed to a Senator, a Member of Congress, or to the Secretary of Agriculture, Washington, D. C.

charge forms a large percentage of the total cost of most crops. In the crop of corn shown in Table I it is one-third of the total cost.

The relative profitableness of the different farm crops is an excellent guide to the farmer in planning his cropping system. Yet it must be kept in mind that cost is only one of the things to be considered. The distribution of labor throughout the season is highly important. As far as possible crops should be grown that do not require large amounts of labor at the same time.

LIVE-STOCK RECORDS.

In addition to the cost and income from crops, it is equally important on farms where live stock are kept for profit to secure similar records for each class of such stock. It not infrequently occurs that a farmer turns a profitable crop into a loss through injudicious feeding. In the following paragraphs the records needed to determine the gain or loss on a single class of live stock are shown and methods are suggested for keeping them.

Table II shows the items that are included in such an account. Some of these items are easily determined; others are estimates, and the accuracy of the final result depends largely on the accuracy with which these estimates are made. It is seen that the estimated value of the manure is about one-third of the final profit. The data as given in the table are an approximate yearly record on a Wisconsin dairy farm.

TABLE II.—*Outline account for one class of live stock: Dairy herd.*

Data.	Item	Subtotal.	Total.
Inventory:			
Jan. 1, 1910—			
Live stock—47 cows, 3 bulls		$2,725.00	
Equipment		409.30	
Total			$3,134.30
Jan. 1, 1911—			
Live stock—38 cows, 2 bulls		2,395.00	
Equipment		373.60	
Total			2,768.60
Difference (decrease)			365.70
Receipts:			
Milk and cream (225,689.3 pounds)	$3,630.29		
Cows sold	1,521.60		
Bulls sold	117.60		
Calves sold (34)	227.60		
Total receipts			5,497.09
Expenses:			
Mixed hay, 26.5 tons	212.00		
Alfalfa hay, 10.71 tons	128.57		
Silage, 168.28 tons	673.15		
Grain, 34.38 tons	835.12		
Pasture, 7 months	275.86		
Total feed cost		2,124.70	

TABLE II.—*Outline account for one class of live stock: Dairy herd*—Continued.

Data.	Item.	Subtotal.	Total.
Expenses—Continued.			
Man labor, 8,819½ hours, at 12 cents	$1,058.34		
Horse labor, 1,443½ hours, at 10 cents	144.35		
Total labor cost		$1,202.69	
Feed for bulls	80.33		
New equipment	5.23		
Repairs on equipment	1.31		
Salt	13.70		
Advertisements	22.50		
Miscellaneous (general expenses, etc.)	49.05		
Decrease in inventory	365.70		
Total miscellaneous expenses		537.82	
Total expenses			$3,865.21
Difference between receipts and expenses			1,631.88
Interest at 5 per cent on average investment in cattle and equipment		147.56	
Building charge, $6 per cow per year		255.00	
			402.56
Balance			1,229.32
Add estimated value of manure			641.05
Profit			1,870.37

It will be noted in Table II that the first items given constitute an inventory of the class of live stock considered. This inventory is made in order to determine the increase or decrease of the value of the herd during the year. In a set of farm accounts the inventory of the different classes of live stock would be included in the regular farm inventory. The receipts which can be credited to the dairy herd are milk, cream, and live stock sold. In addition to these sources of income, the herd should be credited with the value of the manure produced. This item is added later as a special credit and is not included with the actual income. The amount of credit to allow the herd for manure is one of the most difficult points in all farm bookkeeping. Generally speaking, manure has no market value in farming communities, and its actual worth to the farm will vary greatly. Each farmer must be his own judge as to the value of manure. Where the manure is wisely used, its value will usually not vary widely from $1 per ton on dairy farms, and the amount produced per head will not vary greatly from a ton per month. The proportion of the manure that becomes available depends on the length of time the cows are stabled and on the care given the manure.

Under expenses are feeds, including that for the herd bulls (see Table II), man and horse labor, equipment, repairs, and miscellaneous expenses. In addition to these direct charges, certain other items must be taken into consideration in order to determine the profit or loss for the year. We have already credited the herd for sales of live stock, the amount received from this source being over $1,800. Now,

if the herd were worth as much at the end of the year as at the beginning this $1,800 would all be clear profit, but the inventory shows that the value of the herd because of these sales has decreased by $366.30. The profit from sales of stock is thus $366.30 less than $1,800. For this reason we include the decrease in inventory in the charges against the herd, so that it will finally be deducted from the $1,800 which has been included in the income.

Finally, we must take account of the interest on the money invested and the interest and the depreciation on the barn. Interest on the investment is not an actual expense, and hence is given in a separate list beneath the list of actual expenses. With it is given the item of barn rent. This latter item represents an actual expense, but it may be an expense incurred several years earlier; it may be a part of the actual current expenses also, as is the case when the barn has not been paid for and the farmer is paying interest on the money used in building the barn.

Dairy farmers not infrequently delude themselves into thinking they have determined the profit on their herds when they have deducted the cost of the feed from the income received from sales of dairy products. Table II shows how far they are in error when profits are estimated in this manner.

The method of keeping feeding records of a class of live stock will be taken up more in detail in another paragraph.

The labor records of live stock are not hard to determine, for the amount of labor required each day is fairly uniform. A careful estimate can be made of this labor once or twice a month and the total for the year then ascertained. The total based on these monthly estimates will not be absolutely accurate, but will be near enough for all practical purposes. The depreciation charges for the live stock, which are often included in live-stock accounts, are taken care of by the increase or decrease in the inventory. The interest on the investment can be based directly on the average investment as shown by the two inventories. The building charge, or the cost of housing the live stock, should be based on the investment in buildings and the annual repair, depreciation, and interest charge. This figure is difficult to determine accurately, but most farmers will be able to determine it with sufficient accuracy for their purposes.

In charging the different classes of live stock for feed several different practices are followed, and the results obtained are largely governed by the method used. Often it happens that a farmer is more interested in his cattle than in his crops. In order to make his dairy show a profit he will charge the herd with the estimated cost of the different crops which he grows for feed. This cost price may be very much lower than the prevailing market prices of the grain

and hay or other roughage. If there is any profit from the operation of the farm, this method gives all the credit for this profit to the cows. Other farmers charge the live stock full market price for feed raised on the farm. This is undoubtedly the correct procedure, but the price used should be the price *at the farm* and not the price at the near-by market point. The price at the farm and at the market point differ by an amount equal to the cost of hauling the feed to or from market. But when cows are charged market prices for feed, they must also be given credit for the manure they produce.

After a farmer has kept records for several years relating to the cost of different enterprises and to the cost of caring for and feeding live stock, he will be able to work out certain standards which he can thereafter use from year to year. For instance, if a dairyman has kept records for four or five years on the amount of labor required in caring for dairy cows and finds this to be about 16 hours per head per month, he may thereafter use this figure in his records rather than go to the trouble of keeping careful records covering this point each year. If more of these normal farm costs were known many of the worst difficulties in farm bookkeeping would disappear. It is because practically no information is available on many of these points that there is the utmost need for careful work. Under present conditions it is only by having fairly accurate records for a series of years that the farmer can determine with reasonable certainty the cost of any live-stock product. This matter is one of great importance. For example, if dairymen in the Eastern States could state definitely that a quart of milk costs 4 or 5 cents, or whatever the figure may be, they would then be in position to demand a price which would give them a margin over the cost of production. Until such costs are determined it is doubtful whether the consuming public will recognize the difficulties that confront the dairy farmer.

LIVE-STOCK PRODUCTION RECORDS.

In addition to the records of herds or groups of live stock, records are sometimes necessary for each individual animal. This is especially true of dairy herds where the same animals are kept for several years. The milk record of the individual cows is one which is exceedingly important on all dairy farms. It is not necessary, for ordinary purposes, to keep a daily record of the weight of the milk produced by different individuals of the herd; a record of the production of each animal for a certain day each month will usually serve quite as well. Using this as a basis the total production during the year for each cow can be estimated very closely. The total milk yield of a cow, estimated on the basis of one weighing each month, will seldom be more than 3 per cent in error from the true production. If

milk is marketed on the basis of its butter-fat content, then the butter-fat records are equally as important as the milk records. Several forms for keeping milk records are used by the different State colleges and experiment stations, each with its individual merits, and any of them will be found satisfactory. An essential point in keeping any live-stock production record is to have the blanks handy and in such form that they can be totaled without trouble at the end of the month.

FEEDING RECORDS.

It is believed that the most difficult records with which the farmer has to deal are feeding records. These are of such a nature that in keeping them one is constantly dealing with uncertain quantities and values. It is a problem to know the value of a certain crop when it is placed in the barn for feeding purposes, as the quality of that crop may be above or below the average. Again, the amounts fed to each animal, or even to the different classes of live stock, are more or less of an estimate; it is nearly impossible under commercial conditions to weigh the feed at each feeding, as any one knows who has ever taken care of a large number of cattle or stock of any kind. But this fact should not discourage the farmer from attempting to keep a feeding record, for such a record can be made exceedingly useful and valuable. A careful estimate based on the weighing of feeds one day in a month is usually sufficient to give a very satisfactory idea of the total amount of feed consumed by each animal or herd, as the case may be. Where high-priced grain is fed it often happens that a ton of grain is worth more than a ton of milk, and one can not afford to be ignorant of the actual amount fed. Fortunately, it is comparatively easy to weigh or measure grains and other concentrated feeds. The weighing of feeds also eliminates irregular feeding, whether the feeding is done by the same man or by different men, and this tends to prevent fluctuation in milk yields; oftentimes also it prevents sickness of animals. Numerous kinds of feeding-record blanks are in use by farmers and by different agricultural colleges, but none of them are suited to all conditions. If feeding records are to be kept it is a simple matter to draw up a form which will answer the purposes of the feeder. The main point is to have some clear, concise form on which the records can be uniformly kept and in such manner that they can be tabulated with the least possible effort. It is useless to go to the trouble and expense of keeping records unless they are made of some use.

It is surprising how little attention has been given to the cost of keeping work horses, for this is one of the largest items of expense on a great many farms. For the most part the feed given to horses is of higher quality than that given other stock and is more expensive. In Extension Bulletin 15 of the University of Minnesota are given the

results of some accurate horse-feeding records on farms in that State. The investigations show that the annual cost of keeping a horse several years ago, when prices were lower than at present, was about $85. This cost is certainly high enough to warrant careful consideration by the farmer; too many horses will eat up the profit in farming. When it is considered that the average farm horse works only about 3½ hours for each week day in the year it is evident that more attention should be given to the efficient use of horse labor.

INTERPRETATION AND USE OF FARM ACCOUNTS.

In the foregoing pages are outlined very briefly the reasons for farm bookkeeping, and methods and forms are suggested for carrying it out on ordinary farms. The question arises, How can the information gained by these records be applied to the various phases of the farm business? Time and energy spent in keeping accounts are absolutely wasted unless an intelligent use is made of them. Moreover, one must not suppose that a number of records are needed before anything valuable can be obtained from them. It is surprising what useful information can be secured from a few simple records. It is even more surprising what wrong interpretations can be drawn from a set of farm accounts by one who does not understand their real meaning.

The subject of cost accounting on the farm is one of exceptional perplexity. The difficulty is mainly due to the fact that so many of the factors entering into the final result can not be determined with absolute precision and hence must be more or less in the nature of estimates. For example, the manure produced by a herd of cows or by a herd of fattening stock may be the major consideration in keeping stock at all and may justify feeding animals at an actual loss so far as the cost of feed and the value of production are concerned, yet it is not possible to determine with any great degree of accuracy the value of this manure. Again, the cost of an enterprise may depend on such factors as the length of time an implement will last, the amount of its use, the proportion of manure or fertilizer which applied to a given crop will be used by that crop and how much will be available for later crops—all more or less indeterminate.

Another difficulty arises from the dependence of cost in one case on costs in others. Thus, the cost of producing a crop of corn depends in part on the annual cost of keeping a horse, and this cost in turn depends in part on the rate of depreciation of farm buildings. Hence, the annual cost of the barn in which the horse is stabled becomes a factor. The cost of a crop of corn also depends on the acre cost of farm machinery, a very difficult matter to determine with accuracy.

No attempt has been made in the foregoing pages to treat the subject of cost accounting in an exhaustive manner. It has been the aim rather to deal with as simple a record as possible and yet at the same time have the results of sufficient value to be of use to the farmer. The trained agricultural student or the business-college graduate will no doubt desire a more detailed system than has been outlined here, and in this desire he is perfectly justified. But the average farmer is not a trained bookkeeper, and the very nature of his work is such that it is hard for him to do clerical work. After being in the field all day or out in a cold biting wind, it requires considerable exertion to write up a set of accounts in the evening. The farmer is trained to do physical work and, although he is intelligent and capable when it comes to deciding important matters, it is difficult for him to do clerical work of this character. When physically tired it is doubly difficult to do such work as adding a column of figures. Farm bookkeeping is a matter of adapting simple methods to the farmer's needs. It is not a question of forms or having the accounts on the right side of the page or of having them balanced in a certain way, but it is a question of a correct knowledge and understanding of the facts as they exist on that particular farm.

In the preceding pages no effort has been made to outline a full double-entry system of bookkeeping, although it is admitted that such a system would give more complete and systematic results than the simpler methods presented here. Those who have the necessary knowledge of bookkeeping to manage these more complicated systems may very well do so if they desire, but for the average farmer this would hardly be practicable and the simpler methods outlined here are believed to be more satisfactory.

SUMMARY.

Good accounts are as useful to the farmer as to the business man, since farming is a business the same as banking or any other commercial enterprise. Farm bookkeeping does not require that the account be kept in a particular form or upon a certain side of the page, but is a logical selection and arrangement of farm data to permit correct interpretation.

The difficulties of farm bookkeeping are generally overestimated, an entirely wrong impression being held by many people on this subject. Complex forms and methods do not always mean successful farm accounting, for sometimes a few pages of well-selected records are of more practical value than volumes of figures.

Inasmuch as the farm business and the home are practically inseparable, personal and household accounts are needed to balance

the books. Both of these accounts are best handled by grouping the items as much as possible.

A complete inventory is the first and most important step in starting the accounts. The determination of proper values is a matter of good judgment, aided by a study of current market prices.

The cash transactions on a farm may be kept in several ways, but entering the items directly in their respective accounts appears to be one of the most satisfactory methods.

A thorough understanding of what constitute farm receipts and expenses is necessary; otherwise the profit of the farm is seldom figured correctly.

A farm is a combination of enterprises, and a study of each enterprise in its relation to the others is of the utmost importance. Wheat may be a profitable crop to grow, oats an unprofitable crop. Records of the separate farm enterprises will show the facts in each case.

Labor distribution records are seldom kept by farmers, yet such records are in many respects equally as important as the cash account. A good bank balance is often the result of the efficient use of farm labor.

Crops which are grown at a profit may, by being fed to a poor class of live stock, have this profit turned into a loss. Live-stock records, although not so easy to keep as those on crops, are often more useful to the farmer. It is poor policy to lose by injudicious feeding the profits on the crops grown.

Live-stock production records are a guide to the qualities of animals kept; such records are of the utmost importance to the dairyman.

Good accounts are within the reach of every farmer. The few minutes regularly spent on them will yield larger returns than an equal amount of time devoted to farm work, provided proper use is made of the information the records contain.

[A list giving the titles of all Farmers' Bulletins available for distribution will be sent free upon application to a Member of Congress or the Secretary of Agriculture.]

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FARMERS' BULLETIN 511
UNITED STATES DEPARTMENT OF AGRICULTURE

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Expenditures

1919				
Aug	2	Stock food for Hogs		
	5	Lumber for fence gate	3	36
		Personal		05
		Household		90
		Nail		55
				40
				89
	8			20
				00
				75
	9		10	00
	11		3	75
		Personal		25
		Gas for car	1	89
	15	" " "	1	89
		Personal		75
		57 lbs. lead arsenate for potatoes	19	38
		15 sacks lime " "	7	50
		400 lbs Copper sulphate "	32	00
		Wages, Jack Howe	10	00
		" Tom Ferguson	5	50
		Breeding fees, Hogs	4	00
	19	Horse shoeing	4	00
		Grinding 25 Bags barley	3	00
		Household	4	75
		Personal	1	50
	22	Wag	10	00

FARM BOOKKEEPING

ADEQUATE RECORDS are necessary to the efficient management of any business. The farmer, to be successful, must be a business man as well as a grower of crops and producer of live stock. As a business man he should have suitable business records.

Farmers, as a rule, are highly individualistic in their methods, and farm business conditions vary widely. Accordingly, ready-made systems of farm accounts seldom bring out all the facts that the farmer ought to know. Systems must be developed to fit each man's requirements, and efforts to shape one's needs according to a prepared system not based primarily on these needs will almost inevitably result in failure.

Getting a knowledge of accounting principles is the first and most important step toward establishing an accounting system suited to one's individual needs. There are many degrees in farm accounting, from the simple to the extended and complex, but it is obviously impossible to discuss them all in a single bulletin. It is the purpose of this bulletin merely to outline the principles of simple farm bookkeeping.

Office of the Secretary
Contribution from the Office of Farm Management
H. C. TAYLOR, Chief
Issued October, 1912; revised, June, 1920
Washington, D. C.

FARM BOOKKEEPING.

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FARMING IS A BUSINESS, and, to be successful, it must be conducted in a businesslike manner. It involves the production and sale of commodities, just as does manufacturing. The business man, whether in factory or on farm, should be constantly considering two questions:

(1) What profit is my business making?

(2) How can that profit be increased?

The first of these must be answered before an intelligent effort can be made to answer the second. Proper accounting leads directly to the answer to the first question, and hence it is essential to any well-thought-out plan to increase profits.

The problem of the farmer is to meet conditions on his own farm in a way that will give him the greatest net returns, year in and year out, for the use of his capital, his labor, and his managerial ability. Before he can be considered a successful farm operator he must produce results that will cover the value of all these. Capital can earn interest without labor on the part of its owner, and labor can earn wages without owning any capital. The farmer, utilizing both in the conduct of his business, should secure returns that will cover both interest and wages. Not until both of these have been more than covered can any profit be credited to the farming operations. Nothing but return in excess of interest and wages can properly be considered as net profit.

There is reason to believe that many farmers, owing to a lack of proper records, do not know what returns they actually receive, nor how these compare with what they should receive for their work and

the use of their capital. Doubtless many are living on the interest on their capital, making small wages or none, and no net profits.

A very large number of farm problems have been solved by the experience of farmers—far more, in fact, than have been worked out in any other way. There are some problems, however, that have not been solved in this manner. The problem of farm architecture and that of farm accounting are two of these. One reason for this is that much of the instruction the farmer has had on these two subjects has been misleading. As in architecture, so in accounting, the main work that has been done has related to city conditions and is not applicable to conditions on the farm. Most farmers who have tried to keep books have used the systems of city bookkeepers, which are not adapted to farm accounting. Even where these systems have been modified in the attempt to meet farm needs, they have usually failed to meet the farmer's requirements.

The difference between bookkeeping and cost accounting should be definitely understood. Bookkeeping is the keeping of records that will set forth the income, cost, and profit of the business as a whole or complete unit; cost accounting involves the finding of cost, returns, and profit on production units—on a pound of beef, a quart of milk, a bushel of grain, etc.

This bulletin has not been prepared to present any particular systems of accounts for farm use,[1] but is rather a discussion of some of the important principles that are applicable to bookkeeping on the farm. It is believed that the farmer who studies it sufficiently to grasp these principles will be enabled to select or devise a system that will be adequate for his particular needs.

COMPARISON OF COMMERCIAL AND FARM BOOKKEEPING.

In commercial bookkeeping, which has been a subject of study and in process of standardization through several centuries, systems of bookkeeping have been developed which fulfill the needs and requirements of a great majority of merchants. Moreover, in the world of commercial affairs there is considerable similarity in these needs and requirements.

In farm bookkeeping these conditions do not exist. Not only do peculiar conditions occur on almost every farm as to the type of business, size, and opportunities and facilities for record keeping, rendering it difficult to apply a uniform system prepared for use under entirely dissimilar conditions, but the subject of farm book-

[1] Farmers' Bulletins 572 and 782, entitled "A System of Farm Cost Accounting" and "The Use of a Diary for Farm Accounts," respectively, present two more or less standardized systems of farm accounting.

keeping has received little or no attention until the last few decades, and consequently little progress has been made toward the desired end.

Farm bookkeeping principles, however, apply at all times and on all farms, and when these are thoroughly understood and all conditions studied, the development of a proper system to fit these conditions can be taken up with every probability of success.

IMPERSONAL CHARACTER OF BUSINESS.

In order to understand bookkeeping principles, the business should be considered as entirely separate from the individual owning the business. That is, in all relations between it and its owner the records should be handled exactly as if business and owner were two persons. The necessity of this relation is fully recognized in the commercial world, and lack of comprehension of it is one of the causes which prevent many farmers from fully understanding the principles of accounting. The merchant rarely takes goods from his store for his personal use without charging them to his own personal account, just as though they were sold to any other customer. He is usually fully aware that otherwise it would be impossible for him to know the actual state of his business affairs. On the other hand, the farmer ordinarily devotes the property of his business to a considerable extent to his own personal uses without a thought as to the accounting consequences, and as a result may get a false idea of the results of his farming operations when he balances his accounts.

On the farm, where the personal affairs of the owner, his household, and the farm affairs proper are interwoven, this point of view is admittedly difficult to acquire, but nevertheless it is very necessary to acquire it.

In order to carry out this idea it is a good plan to consider the general funds received for farm products as belonging to the farm, and for the owner to maintain a separate purse for his personal requirements, refilling it from time to time from the farm funds, and charging his personal account on the farm books with the amounts so used. This idea, as is explained elsewhere in this bulletin, may be carried a step further by establishing a separate purse for the household expenses, allowing the housekeeper a certain amount weekly or monthly on which to run the house. Such practices are well calculated to give a man a good perspective of the relations existing between the finances of the farm, the household, and himself, and are more generally satisfactory to all concerned than the common practice of having a single purse for all these purposes.

APPLICATION OF DOUBLE-ENTRY PRINCIPLE.

While it is true that success in farm accounting is not a matter of forms or blanks, but one of using well-defined principles, the double-entry idea can not be lightly disposed of, as some writers on farm accounting have tried to do, by stating that it is a mere matter of form. It can not be stated too positively that double entry is not simply a form of bookkeeping. It is an indispensable feature of correct accounting.

Briefly stated, this principle is based on the fact that every business transaction has, for each party involved, two distinct sides. One value is *acquired*, another is *surrendered*. For instance, a person selling a horse acquires cash value and surrenders horse value. If the horse is sold on credit to John Smith, account value (the fact that John Smith owes this value) is acquired instead of cash value. When he pays for the horse, cash value is acquired and account value (he no longer owes anything) is surrendered. If the records do not take account of both sides of each transaction they will not show the facts, and will, therefore, be misleading, and worse than useless.

Violations of this principle are common, and lead to the most erroneous conclusions in farm cost accounting. Carrying the value of manure as a credit to the cattle account and not charging this same value to the crop accounts is an example of a common way in which this principle is violated, and many other instances might be cited. No matter what the transaction, this principle holds good and should never be violated.

In the case of cash transactions where a cashbook is used, the double-entry principle is automatically followed. Entering the money received and giving the description of what was sold for it, charges the cash account with the value on the one hand, while the crediting of the proper account with the value of the thing sold completes the "double entry."

RULES FOR DETERMINING CHARGES AND CREDITS.

As a usual thing it will not be found difficult to determine for each transaction which account to charge and which to credit. The general rule may be briefly stated thus:

Charge that account which acquires the value.
Credit that account which surrenders the value.

Where strictly cash accounts are kept little trouble will be experienced, as all cash received is *acquired* and by the rule is a charge to cash, while the corresponding credit is carried to the account which *surrendered* the value for which cash was received, and vice versa.

As elsewhere explained, this is automatically performed in a simple account of cash receipts and expenditures.

A more difficult problem comes up in determining when to charge an expenditure of cash to expense and when to investment (purchase) accounts. Also it is sometimes hard to tell when to credit a receipt to an income and when to an investment account. The rules in this regard are almost as simple as the foregoing, and may be stated briefly as follows (examples given below):

(1) Charge to expense accounts all those things which will be consumed as soon as used.

(2) Charge to investment accounts those things which will be used over and over again in the course of the farm business or which are bought for resale in the regular course of the business.

(3) Credit to investment accounts receipts from sales of articles which have formed part of the farm equipment or permanent plant.

(4) Credit to income accounts all receipts for products of the farm or for things incidental to such production.

(5) Credit to expense accounts all receipts for expense *rebates* and for things previously charged to expense accounts.

Examples of items falling within the scope of the foregoing rules are:

Rule 1: Seed, twine, feeds, wages, etc., parts for machinery, building repairs.

Rule 2: Work stock, cows for the dairy herd, breeding animals, machines, drain tile, fencing, etc., and animals bought for fattening and resale.

Rule 3: Old machinery and machinery junk, old lumber, work stock, animals from the permanent herds, etc.

Rule 4: Milk, eggs, crops raised and sold, market live stock, etc., and receipts for labor and machine work done by farm labor.

Rule 5: Feed bags; surplus purchased feed, seed, and twine; spare machine parts sold, etc.

While the foregoing rules will doubtless prove of assistance in analyzing transactions to determine the proper charges and credits, there will sometimes occur transactions which seem to fall within what may be called the "twilight zone" between two rules. In such cases good judgment alone must be relied on, as no set of rules will cover all cases.

TYPES OF FARM RECORDS.

Farm records may vary from the taking of an annual inventory to carrying the most complete and detailed system of cost accounts. The following outline illustrates three types of farm accounting from the simplest to the most complex.

Outline of types of farm records.

Type.	Records necessary.	Information that may be obtained.
I. Property record....	1. Inventories made once a year.	1. Investment in each kind of farm property and net worth of the farm as a whole. 2. Increase or decrease in net worth during the year.
II. Farm bookkeeping. (Accounts with the farm as a unit.)	1. Inventories made once a year. 2. Financial records. 3. Value of supplies furnished by the farm to the family. 4. Value of board furnished by family to paid farm laborers. 5. Unpaid family labor devoted to farm work.	1. Investment in each kind of farm property and net worth of the farm as a whole. 2. Increase or decrease in net worth during the year. 3. Classified summary of farm receipts and expenditures. 4. Farm income. 5. Net farm profit. 6. Household and personal expenses. 7. Value of food, fuel, and use of house furnished by farm to family.
III. Farm cost accounts. (Accounts with the farm and with each farm product and department as a separate unit.)	1. Inventories made once a year. 2. Financial records. 3. Value of supplies furnished by the farm to the family. 4. Value of board furnished by family to paid farm laborers. 5. Value of other perquisites furnished by farm to paid farm laborers. 6. Unpaid family labor devoted to farm work. 7. Labor record. 8. Feed records. 9. Livestock production records. 10. Crop supply and yield records.	1. Investment in each kind of farm property and net worth of farm business as a whole. 2. Increase or decrease in net worth during the year. 3. Classified summary of farm receipts and expenditures. 4. Farm income. 5. Net farm profit. 6. Household and personal expenses. 7. Value of food, fuel, and use of house furnished by farm to family. 8. Cost per hour of man labor. 9. Cost per hour of horse labor. 10. Complete distribution of all costs. 11. Complete distribution of all income. 12. Complete allocation of all profits and losses. 13. Cost of production in each department. 14. Margin between cost and market value. 15. Efficiency factors in farm management.

PROPERTY RECORD.

The first type includes only the farm inventories made once each year and is valuable as a means of determining the value of the farm property and of showing whether the farmer has made progress in a financial way during the year or whether he has gone back. It measures only the amount of this progress or going backward. It is well to emphasize this point. The increase or decrease in net worth does not represent the profit or loss on the farm business, since it is affected by the affairs of the farm family. If one knew the amount of the household and personal expenses, the value of the unpaid farm labor of the family, and also the value of the interrelated transactions between the farm and the family (see Type II, Nos. 3 and 4), it would be possible to determine, from these data and the inventories, the actual farm income.

For instance, if the cash expenditures for household and personal purposes were $606.85, the personal income $14, the value of the interrelated items 3 and 4, $677.74 and $60 respectively, and the value of the family labor, $110, the following calculation would disclose the actual farm income:

Net inventory increase		$155.36	
Add:			
Household and personal cash expense	$606.85		
Value of supplies furnished family	677.74	1,284.59	
			$1,439.95
Subtract:			
Value of board furnished by family	60.00		
Value of unpaid family farm labor	110.00		
Personal income	14.00		
			184.00
Balance (represents income from farm)			1,255.95

Briefly put, to find the farm gain it is necessary to add to the increase in inventory value the value of those things furnished to the family by the farm and to subtract the values furnished to the farm by the family.

In order to determine the net farm profit, the sum of the interest on the farm capital and the value of the farmer's time must be deducted from the farm income, as will be explained further on.

In this computation must be taken into account the amount of income, if any, from personal or nonfarm sources. Dividends or interest received from outside investments, jury and witness fees, and gifts of money received are common examples of such items. The amount of personal income should be included in the items to be subtracted from the amount of inventory increase, if this amount has been included in the general purse, and therefore takes the nature of supplies (cash) furnished by the family (which includes the farmer) to the farm.

FARM BOOKKEEPING.

The second type comprises the inventories, financial records, and records of interrelated values. Financial accounts are more generally kept by farmers than any other kind of records. Many farmers, however, after keeping financial accounts for a year, find they can get little valuable information from them in return for the time and attention devoted to them. This is because they have no inventory records. The inventories are just as necessary for the proper and intelligent interpretation and understanding of the financial accounts as are the financial accounts themselves. They are the milestones of business, corresponding to the balance sheets of banks and other commercial and manufacturing concerns, and are always necessary, no matter what other accounts are kept.

FARM COST ACCOUNTS.

The third type represents all the records necessary to complete farm cost accounts, which, if successfully carried out, will give the actual, as well as the relative, cost and profit on all the farm enter-

prises as well as other valuable data. Cost records can be obtained only by the outlay of much time and close attention to detail. A man who works hard all day at manual labor rarely has either time or inclination to spend much of his leisure time in this work. Only when the conditions seem to warrant the assumption that the accounts will be carried through to a successful end should they be attempted. While this bulletin, in a general way, touches upon some of the principles applicable to farm cost accounts, it is concerned in the main with a discussion of the records contained in type II.

THE FARM INVENTORY.

The term "inventory" is used to designate a list of property and property values. As has been previously pointed out, the annual farm inventory is a sort of guide or mile-post which indicates to a farmer just how he stands, financially, year by year. Without it no other records can be correctly interpreted.

A farm inventory is simply a statement showing what land, buildings, live stock, produce, supplies, etc., are owned and what they are worth at the time the inventory is taken. It shows also the amount of cash on hand and the amounts owed or owing at that date. It is a list of farm property and farm debts. To be of the greatest value it should be itemized to show separately what the farm is worth, the value of each head or group of live stock, the value of each machine or tool, the products for sale or feed, the materials and supplies on hand, the amounts owing by the farm, and the amount of cash on hand or in the bank. It must also show, under "Liabilities," the amounts of all debts the farmer owes other people. Table I exhibits a good sample of a farm inventory. It will be noted that it is divided into several parts or divisions as has been previously recommended.

TABLE I.—*Sample of a farm inventory, showing in a general way how this valuable record is prepared.*

Divisions and items of property.	April 1, 1918.			April 1, 1919.		
	Quantity.	Value per unit.	Valuation.	Quantity.	Value per unit.	Valuation.
REAL ESTATE:						
Land and improvements.....acres.	120	$80	$9,600.00	120	$80	$9,600.00
LIVE STOCK:						
Cows, dry and in milk	1	125	125.00	1	100	100.00
Heifers	1	40	40.00	2	60	120.00
Calves	2	30	60.00	4	25	100.00
Steers	1	115	115.00			
Total cattle			340.00			320.00
Horses—						
Jim, 12 years old			200.00			175.00
Jack, 14 years old			175.00			160.00
Jen, 8 years old			225.00			225.00
Jess, 20 years old			35.00			Died.
Total horses			635.00			560.00

TABLE I.—*Sample of a farm inventory, etc.*—Continued.

Divisions and items of property.	April 1, 1918.			April 1, 1919.		
	Quantity.	Value per unit.	Valuation.	Quantity.	Value per unit.	Valuation.
LIVE STOCK—Continued.						
Swine—						
Brood sows	1	$75	$75.00	7	$60	$420.00
Boar				1	45	45.00
Pigs	3	20	60.00	24	6	144.00
Total swine			135.00			609.00
Poultry	50	1.50	75.00	62	2	124.00
Total live stock			1,185.00			1,613.60
MACHINERY AND TOOLS:						
Plows, walking, 12-inch	2	10	20.00	2	8	16.00
Plows, sulky, 16-inch	2	75	150.00	1	65	65.00
Disk harrow, double, 8-foot	1	20	20.00	1	17	17.00
[All items listed but not shown here]						
Total machinery and tools			1,633.50			1,498.25
FARM PRODUCE:						
Barley.....bushels	32	2	64.00	124	1.50	186.00
Oats.....do	284	1	284.00	302	.80	241.60
Corn, ear.....do	30	1	30.00	50	.75	37.50
Buckwheat.....do	17	1	17.00	20½	1.50	30.50
Hay.....tons	11	23	253.00	15	20.00	300.00
Total farm produce			648.00			795.60
PURCHASED FEEDS AND SUPPLIES:						
Bran.....pounds	100	.03½	3.50	250	03½	8.75
Shorts.....do	50	.03½	1.88			
Lime.....tons				5	6.00	30.00
Fence posts				50	35	17.50
Grain bags	22	10	2.20	12	10	1.20
Total feed and supplies			7.58			57.45
NOTES AND ACCOUNTS:						
Harry Smith, note for cow			100.00			
George Jones, for corn			42.00			
John Williams, for corn						63.00
Henry Robinson, for work						5.00
Total notes and accounts			142.00			68.00
CASH ON HAND AND IN BANK			256.35			195.49
Total value of "assets" (property *owned*)			13,472.43			13,827.79
NOTES AND ACCOUNTS OWING:						
Farm mortgage			4,000.00			4,000.00
Samuel Grey for hogs						200.00
Total "liabilities" (amounts *owed*)			4,000.00			4,200.00
SUMMARY:						
Total assets			13,472.43			13,827.79
Total liabilities			4,000.00			4,200.00
Balance or "net worth"			9,472.43			9,627.79
[Increase $155.36 for the year.]						

DIVISIONS IN A FARM INVENTORY.

Real estate.—Under this heading are placed the farm land, buildings, fences, woodlots, and all items of land improvement, for the farm is thought of as embracing all of these in a single unit. If the farm is sold all of these go with it.

Live stock.—All the different classes are entered separately, as horses, cattle, hogs, poultry, and the like. Each class is itemized by individuals or subclasses as far as is practicable. Thus the total amount invested in horses or any other class of stock can be found for any year. In taking this part of the inventory each animal may be given a separate value, or some method may be followed that enables each individual or class to be recognized in taking the next inventory.

Machinery and tools.—This division contains the largest number of items to be listed, as this part of the equipment on a farm is always varied. In taking this part of the inventory it is important to use care not to overlook any item, for if certain implements are overlooked in one inventory and then included in the next, confusion and inaccuracy result. If carefully taken and each item listed separately, a machinery and tool inventory will fill several pages of a good-sized book. If such detail is not desired, the minor tools of small value may be grouped in a single item and a lump valuation given, but such a course is not advisable. This part of the inventory, carefully made at the beginning and checked up each year, is a help in locating minor tools. It is surprising what a large number of these small tools there are on a farm, and what a considerable number disappear during a year. All farmers know how easy it is to lose a hammer or a wrench, but an old wagon never disappears.[1]

Inventory day is a convenient time to call in all tools that have been loaned out. Small tools have a habit of changing owners if they remain away from home too long.

Produce, feed, and supplies.—Some items in these divisions are hard to estimate closely, as, for instance, the number of tons of hay, straw, and other produce in bulk,[2] but experience, conservatism, and good judgment will surmount this obstacle and give fairly accurate results.

Financial items.—This division includes all "book" items, sometimes known as "financial" or "intangible" items, as distinguished from the other items which are termed "physical" or "tangible" property. These consist of the cash on hand and in the bank and the amounts due the farm from others.

The sum of the property values embraced in the foregoing five divisions will be the value of the "assets" or property *owned*. This does not necessarily constitute the net worth, as the "liabilities" or amounts *owed* have not yet been listed, summed up, and deducted, so another division of the inventory should now be constructed to include these.

Liabilities.—Here should be listed the mortgage, notes, and accounts payable. When these are added and their sum subtracted from the total assets, the balance is known as the "net worth."

[1] Circular No. 44 of the Bureau of Plant Industry, entitled "Minor Articles of Farm Equipment," gives a very complete list of small tools found on farms.

[2] See Circular No. 67, entitled, "Measuring Hay in Ricks and Stacks."

HOUSEHOLD GOODS, ETC.

It must be understood that in the farm inventory no mention is to be made of the household furnishings or personal effects, as only the farm and its accessories are to be considered. While it is true that the dwelling has been included in the value of the farm, this is necessary, as it is a part of the real estate and would be included if the place were sold.

It will be noted in the inventory form shown in Table I that there is a column for the values on April 1 of one year and another for the corresponding values of the same items the following year. This idea is a convenient one and the idea can be carried further by providing an inventory book with columns for a number of years.

DETERMINING VALUES.

There are many and varied opinions on the question of how farm values should be determined. It has been suggested that the inventory value of a farm should be its original cost to its present owner. The objection to this is that one of the important purposes of making an inventory is to ascertain the actual worth of the property, which may be considerably greater, or in some cases much less, than its original cost. Then again, the farm may have been inherited by its present owner, and therefore may have cost him nothing.

Unusually high or speculative values should not be used, as they do not represent facts and only tend to deceive and mislead. The danger of overvaluing should be carefully guarded against, as no good can come from it, while considerable harm may. A good rule is to place the value of almost all the various permanent property items at what they could be sold for, not at forced sale, but under normal conditions. This method may seem incorrect in the case of real estate and permanent live stock, in that some may think it calculated to give too low values. The danger of placing values too low is not nearly so great as placing them too high and then finding, at some future date, that conditions did not warrant so high valuations. The exceptions to valuations by this rule are explained hereinafter.

When the inventory value of the farm land is advanced to keep pace with advancing land values, and not because improvements have been made in the course of the farm business, such increase should not be allowed to swell the farm profits for the year. In such cases care should be taken to exclude this appreciation in determining the farm profit, and this is best accomplished at the time the records are finally summarized as shown in Table X by deducting it from the ascertained net farm profit figure ($202.25 in the table).

In appraising the values of market live stock and farm produce, market price should be used, always deducting therefrom a sum

sufficient to cover the cost of getting to market. Inasmuch as market prices vary from year to year these values may be low one year and high the next, or the opposite. It is impossible to ignore this sometimes troublesome fluctuation, but, in ordinary times, market changes are not extraordinarily great from one year to the same date a year later. However, it must be remembered that a man's worth does actually fluctuate with the market value of the property he owns. If no attention is given to market values a serious source of inaccuracy may be written into the records.

Purchased feeds and farm supplies should be valued at cost.

DEPRECIATION.

In the case of the property composing the permanent equipment of the farm or "farm plant," as it is sometimes called, just as factories are sometimes known as "manufacturing plants," the factor of depreciation must be considered. Few accurate figures as to depreciation of farm property are available. It is quite difficult accurately to gauge depreciation, since it depends on a number of factors which vary greatly in different sections of the country and even in the same section. A few suggestions will be made as to some of the principles affecting depreciation rates, but good judgment must be used, in every case, in applying them to definite conditions.

For ordinary frame farm buildings it is generally considered that 2 to 3 per cent per year will be a fair allowance. Brick, stone, tile, and concrete structures will not take so high a rate. Poorly built frame sheds and the like will require considerably higher allowances. It sometimes happens that the increase in farm-land values from year to year will more than offset the depreciation of buildings and other improvements. In other cases the growth of timber in a good farm woodlot will have a tendency to offset this loss. Of course, if farm cost accounts are being carried on, each of these increases would have to be shown as a separate gain, and depreciation as a loss, but in farm bookkeeping, which considers the whole farm as a unit, the loss and gain may simply offset each other. On many farms buildings are kept in such good repair that they depreciate very slowly, and the amount spent for maintenance each year may be considered as eliminating the necessity of allowing for depreciation, as the buildings, under these circumstances, will last almost indefinitely. Cases are not uncommon where frame buildings are in excellent shape after more than 100 years' use. This is also true in a measure of fences when built of the very best materials and properly maintained.

In the case of tile drains, the rate of depreciation may vary from a rather high to a very low rate, according to the quality of the tile, the care used in laying it, and in keeping the outlets open and protected from animals.

In valuing machinery and tools, market values do not consistently apply. It is well known that a machine depreciates in market value very rapidly the first year, or even the first month, used. That is, a mowing machine may cost $75, but if it is used a month it becomes a secondhand machine, and it may be difficult to realize $50 on it. The farmer buying new equipment may find the market value or sale price greatly reduced after one year's use, while the second and third year the value may not be further reduced appreciably. In other words, a mower that has been in use three years may sell for almost as much as one that has been used but three months. As the machinery equipment is part of the farm "plant," or the property necessary to the carrying on of the farm business, it should be valued at its value to the farm, and this value is not determined by secondhand machinery prices. It therefore becomes necessary to use somewhat arbitrary means of valuation. By dividing the original cost by the probable useful years of life an annual depreciation factor is determined, and by reducing the value each year by the amount of this factor the inventory value will be gradually decreased until at last it is entirely extinguished. By correcting this factor from time to time, this method will prove satisfactory in the general run of cases.

The number of years of useful life will depend on many factors. Among these are extent of use, climate, kind of machine, soil type, topography, and the care taken of the machines. Some farmers who take good care of their machines make them last much longer than machines owned by those who do not take care of them.

The rate of depreciation on farm machinery has been variously estimated at from 6 to 15 per cent. Where machinery is inventoried and valued in groups, or as a whole, the problem is simpler, but this method can not claim any great degree of accuracy. Mr. Grant G. Hitchings, a practical New York farmer who has given much attention to bookkeeping, uses the following method: He deducts 10 per cent from the first inventory value and to the remainder adds the cost of all new items bought during the year. Thus he figures the second inventory value. For instance, if his machinery was worth $825 at the beginning of the year and during the year a new mower and hay rake were purchased for $115, he would figure his machinery value for the inventory at the end of the year as follows:

Inventory value at the beginning of the year	$825.00
Less 10 per cent	82.50
Remainder	742.50
Add cost of new machinery purchased	115.00
Inventory value at the end of the year	857.50

This method can not be expected to give a precise inventory value for all years, but when used over a long period the values should be fairly accurate. If it is found by experience that the rate is obviously too high or too low, a new inventory may be taken any year and the total amount corrected. This method is a practical way of handling the valuation of machinery but is not to be recommended in all cases, especially if cost accounts are being conducted.

The depreciation rates of the permanent live-stock herds should be based on careful appraisals made at inventory time each year. It is true that these appraisals will be based, in part at least, on estimated depreciation, which in turn will be based on original cost, estimated length of useful life, and sale value when useful or productive life is over. U. S. Department of Agriculture Bulletin 413 gives useful information on these points as to work horses and certain breeds of dairy cattle.

APPRECIATION.

Certain classes of farm property appreciate constantly up to a certain point. Such a piece of property is a good farm woodlot. The young stock of the permanent herds come also within this category, but the methods of valuation already explained cover these.

When growing orchards and other semipermanent crops are occupying part of the farm land, the increased value of the land carrying these must be taken into consideration when valuing the farm, and as these crops grow and approach maturity, thereby increasing in value year by year, it is necessary to take into account these increasing values at inventory time each year. This should never be based on estimated returns, as working on such a basis would be what is known as "overcapitalizing," or, as it is commonly called in the financial world, "watering stock." People are prone to wax enthusiastic over anticipation of profits from their ventures, and the result is likely to be "inflated" or highly overestimated values. It is best to stick to conservatism, and to base these values on the actual first cost of the plants or trees, plus cost of planting, and to increase the value from year to year, in proportion to the cost of maintenance until the period of paying crops is reached. They may be carried at a stationary value during the height of the cropping life, and then, as their fruitfulness begins to wane, the value may be gradually reduced and finally extinguished when the land is again cleared and put to other uses.

THE VALUATION OF FARM PRODUCTS AT COST OR MARKET VALUE; WHICH?

The rules given in the foregoing discussion on valuations represent, in a general way, the opinion of the American authorities on farm accounts. Some accounting authorities, however, notably

certain English farm accountants, claim that to base appraisals of farm products not yet sold on market value is wrong in principle, and that, as in commercial accounting, so in farm accounting, *cost* and not *market value* should be the governing principle in all valuations of such farm property.

It is unnecessary to go into a lengthy discussion here as to the merits of these differing opinions, but inasmuch as they do exist it is well to explain them briefly. The first, holding for *market value at the farm*, is based on the fact that the farm produces staple articles, the market for which is practically always open and the demand therefore unlimited, and in consequence the profit is actually made when the articles are *produced* and not when *sold*. The second holds that no profit is made until the produce is sold, and, presumably, the money actually in hand.

There is one feature that must be mentioned which supporters of the second idea have entirely overlooked. The farmer's "turnover" period (length of time necessary for realization on his operations) is at least an entire year, and at his discretion he may make it longer. Conditions of market may cause him to withhold his products from sale from the year in which they are produced to a subsequent year, and inventory valuations made at *cost* would result in showing an entirely erroneous state of affairs, in that the profits of the first year might be entirely eliminated and those of the second year doubled. To illustrate this point, let it be supposed that a farmer prepares his farm land, plants and harvests a crop of corn, and, because of market conditions, holds this crop for some time and finally sells it along with the crop of the succeeding year. As the costs of this crop have all been included in the accounts of the year in which raised, it does not appear justifiable to credit all the profit thereon to the year in which sold. In fact, to the farmer who wants to know how one year's operations compare with another, such a practice would undoubtedly seem absurd, as, in fact, it is.

"It may very properly be asked, what is the chief object and incentive of the farmer in keeping records and accounts? Is it merely for the academic purpose of securing abstract facts, or is it to furnish him with facts that will enable him to discern the practical result of his operations, year by year, and be of value to him in bettering his affairs?"[1] Certainly there can be but one answer, as far as practical opinion is concerned.

When the inventory is made at the end of the year, one of its important uses is to enable its owner to know what *that particular year*, and not some future year, has produced in the way of profit.

Valuations based on market value at the farm will give this information; valuations based on cost will not.

[1] James Wyllie, Lecturer, West of Scotland Agricultural College.

TIME TO TAKE AN INVENTORY.

The best time to take an inventory varies in different parts of the country, depending upon region and business practice. In the Northern and Eastern States perhaps the best date is March 1 or April 1; in the South an earlier date would probably fit conditions better. In the Central States March 1 is undoubtedly the best time, as all farm business transactions in that region date therefrom, while in the northeastern part of the country the farmers' usual date of reckoning is April 1. This ordinarily corresponds with the date on which tenants change farms. On specialized farms special dates may be most convenient. Fruit farms, truck farms, and the like find January 1 a satisfactory date. On poultry farms September 1 or October 1 is a good date, because the new poultry year usually starts at the time the hens are placed in winter quarters. Thus it will be seen that the most convenient time for taking an inventory varies with conditions.

Upon the completion of the inventory the most important of the year's records is finished, for, as already stated, the inventory is the basis on which is erected the future system of records. Without an inventory it is impossible for any business man to know definitely what he is gaining or losing, but having a good clear inventory of all his property he is prepared to keep such further records as will give him the information he desires at the end of the year.

THE FARM INVENTORY AS A "BALANCE SHEET."

The "balance sheet" is the form of statement used in the business world to set forth the standing of a commercial firm. In the business world the uses of the balance sheet are very important, as a great deal depends upon its showing. One of its uses is as a basis of credit. When a dealer wishes to establish a line of credit with a bank or a wholesale house, it is the usual custom to forward for inspection his latest balance sheet, duly authenticated.

Of recent years companies have been formed which examine the balance sheets of business firms and "rate" them—that is, fix their standing from a credit viewpoint. These "credit ratings," as they are called, are then published annually in book form, and they constitute a most important source of information on business credits.

This method of rating credits has proved a great convenience to business men, both those asking credit and those from whom credit is asked. Farmers have never had the benefit heretofore of this convenience. Credit men have come to believe, with every reason, that few, if any, farmers can submit a statement or "balance sheet" that will satisfactorily serve as a basis for the granting of a line of credit. Accordingly, farmers have had to depend for needed credit on local

firms, no matter how inadequate their facilities or how unsatisfactory their terms and interest rates. This state of affairs was one of the factors that resulted in the establishment of farm-loan banks.

Although it is not the purpose in this bulletin to go into all the details, and sometimes complexities, involved in the preparation, auditing, and certification of commercial balance sheets, it is thought proper, in view of the foregoing facts, to set forth clearly how farmers who have made good inventories have all the essential data from which to construct a balance sheet should occasion demand it. A complete farm inventory contains all the elements of a balance sheet, except that the various capital elements (investment, surplus, reserves, undivided profits, etc.) of the balance sheet are embraced within the single item, heretofore termed "net worth" in the inventory, and that certain accrued and unexpired expense items of minor import may have been omitted. The arrangement is, however, considerably different.

As an example of a balance sheet constructed from a farm inventory, Table II has been prepared from the 1919 values of the inventory given in Table I. As will be seen, the arrangement differs from that of the inventory and many of the details are omitted, but the salient factors are there and arranged in one of the accepted commercial balance-sheet forms.

The assets are listed first, and are divided into current assets (or those readily available) in the order of their "liquidity" (or quickness of availability in case of necessity) and fixed assets in the order of their "fixity." It will be noticed that all the property that goes to make up the farm "plant" or permanent equipment necessary to carry on the business in its customary channels is listed under the fixed assets.

The liabilities are arranged according to the order in which they will have to be paid or "liquidated." The difference between the total assets and total liabilities, heretofore designated "net worth," represents the amount invested plus the net amount of profits (or minus the net losses) not yet withdrawn for personal use.

TABLE II.—*Sample of a farm balance sheet prepared from a complete farm inventory.*

BALANCE SHEET.

JOHN DOE, *Doeville, Va.*, APRIL 1, 1919.

ASSETS.

Current assets:		
Cash on hand and in bank	$195.49	
Accounts receivable	68.00	
Grain on hand (per inventory)	495.60	
Hay on hand (per inventory)	300.00	
Market live stock (per inventory)	144.00	
Farm supplies (deferred expense)	57.45	
Total current assets		$1,260.54

Fixed assets (present values):		
Land and buildings	$9,600.00	
Machinery and tools	1,498.25	
Work horses	560.00	
Productive live-stock herds	909.00	
Total fixed assets		$12,567.25
Total assets		13,827.79
LIABILITIES.		
Accounts payable	$200.00	
Mortgage payable	4,000.00	
Total liabilities		4,200.00
CAPITAL.		
Capital invested plus undivided profits		9,627.79
Total liabilities and capital		13,827.79

FINANCIAL ACCOUNTS.

In starting to keep a record of cash received and paid out it is of the utmost importance to know definitely just what records are wanted.

WHAT ACCOUNTS TO KEEP.

An adequate schedule of the headings under which it is desired that the farm receipts and expenditures shall be segregated is an essential step to successful farm bookkeeping. A proper "classification of accounts," as this step is designated in commercial accounting, is in line with the first essential requisite for bookkeeping, namely, "to know what accounts to keep."

Among accounting authorities there are several well-defined systems of classifying accounts, but not all these need be taken up here. The classification presented in Table III as a suggestion for farm bookkeeping purposes is based on farm experience and is also in line with accounting authorities.

TABLE III.—*A suggested classification for accounts to be used in farm bookkeeping.*

ASSET ACCOUNTS.	PROPRIETORSHIP ACCOUNTS.
Cash in bank.	Invested:
Petty cash (pocket change, etc.).	Capital invested.
Accounts receivable.	Proprietor's personal.
Notes receivable.	Proprietor's household.
LIABILITY ACCOUNTS.	Purchases:
Accounts payable.	Live stock purchased.
Notes payable.	Machinery and tools purchased.
Mortgages payable.	Building materials for permanent improvements.

PROPRIETORSHIP ACCOUNTS—Continued.

Modern improvements purchased.
Income:
- Crop sales.
- Crop product sales.
- Live stock sales.
- Live stock product sales.
- Miscellaneous sales.
- Incidental income.

Expense:
- Labor.
- Purchased feed.

PROPRIETORSHIP ACCOUNTS—Continued.

Expense—Continued.
- Live stock expense.
- Crop supplies.
- Maintenance of machinery and tools.
- Maintenance of buildings and other land improvements.
- Insurance and taxes.
- Interest.
- Incidentals.
- Depreciation.

This classification is very elastic and may be expanded or contracted at will, when conditions seem to demand it, by subdividing or combining the account headings presented. For instance, if expansion seems desirable, crop sales account may be subdivided so as to include a separate account for each crop sold, live stock expense account may be subdivided into veterinary expense, shipping expense, etc., and so on through the entire list.

If, on the other hand, fewer accounts are thought to be sufficient, the classification may be contracted by combining all the sales into one account.

This process of condensation carried out fully might finally result in a classification somewhat as follows:

Asset accounts:
- Cash.
- Accounts and notes receivable.
- Inventories.

Liability accounts:
- Accounts, notes, and mortgages payable.

Proprietorship accounts:
- Investment and withdrawal.
- Purchases (live stock, improvements, equipment).
- Income (sales and incidentals).
- Expense.

MIXED ACCOUNTS.

It is very necessary in accounting that "mixed" accounts shall be avoided, since they require analysis to interpret properly their meaning. By "mixed accounts" are meant those which carry items of asset or liability values along with those of income or expense. An example of a mixed account is given in Table IV. Here the account with "dairy" includes asset values (value of the dairy herd), income values (sales of dairy products), and expense values (cost of feed, etc.). Before the desired facts about the dairy enterprise can be ascertained, such an acount must be "analyzed" or separated into property values, income, and expense. If there had been three accounts headed "Dairy herd," "Dairy income," and

"Dairy expense," these three accounts would have set forth in their totals the distinct facts desired relative to this enterprise, without any study or analysis being necessary.

TABLE IV.—*Sample of a "mixed" account or account carrying more than one class of financial data. This account carries three distinct classes, namely, asset (a), income (i), and expense (e).*

CHARGES. DAIRY ACCOUNT. CREDITS.

Date.	Item.	Amount.		Date.	Item.	Amount.	
1918							
Jan. 1	Inventory of herd (*a*)	$2,250	00	Jan. 3	Check for milk (*i*)	$85	00
10	Feed, 1,000 lbs. (*e*)	28	00	14	Sold 2 veals (*i*)	36	70
16	Disinfectant, ½ gal. (*e*)		75	16	Sold feed bags (*e*)	1	00
20	Bought 2 cows (*a*)	256	00			122	70
28	Bought bull calf (*a*)	50	00		Balance	2,462	05
	Total for January	2,584	75		Total	2,584.	75
Feb. 1	Balance brought down	2,462	05				

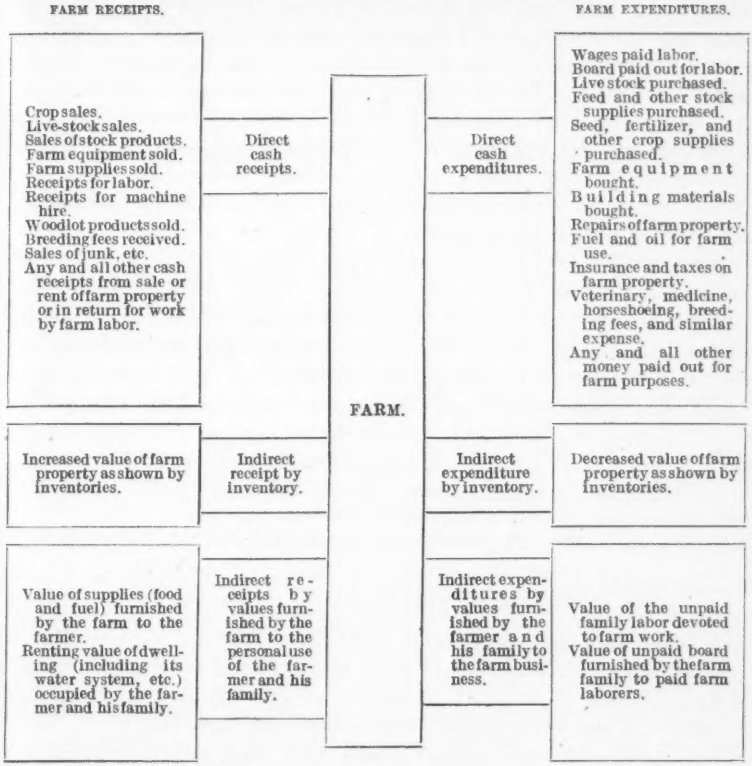
The totals for January, and the balance brought down on February 1, mean absolutely nothing as presented in this table. If the proper accounts had been kept the books would show directly and without the slightest analysis that the investment in the dairy herd stood at $2,556, the dairy receipts for January were $121.70, and the expenses $27.75 ($28.75, less $1 for feed bags sold). It is just as easy to "post" items to a detailed account as to an account where everything is lumped together, and each account carrying a definite set of facts tells its story at a glance.

It is therefore an important provision to avoid mixed accounts wherever possible. The classification of farm accounts exhibited in Table III contains no mixed accounts. Separate accounts with each crop or group of live stock may be carried, but these vary so much on different farms that no attempt has been made to indicate them. A system founded on the accounts shown here will permit the drawing off of a statement of balances (technically termed a "trial balance") at any time, which together with the inventory will present all the necessary facts without further analysis. Every man must suit himself in the accounts he intends to keep. If it is not thought advisable to start so many accounts, mixed accounts may be carried, but it is better that they be avoided.

THREE DISTINCT CLASSES OF FARM RECEIPTS AND EXPENDITURES.

It may be well, at this point, to explain clearly the three distinct ways income may come and expenses accrue in the farm business. This may be made clear by a study of the following diagram:

Diagram of farm receipts and farm expenditures.


FARM RECEIPTS.
FARM EXPENDITURES.
Crop sales.
Live-stock sales.
Sales of stock products.
Farm equipment sold.
Farm supplies sold.
Receipts for labor.
Receipts for machine hire.
Woodlot products sold.
Breeding fees received.
Sales of junk, etc.
Any and all other cash receipts from sale or rent of farm property or in return for work by farm labor.
Direct cash receipts.
Direct cash expenditures.
Wages paid labor.
Board paid out for labor.
Live stock purchased.
Feed and other stock supplies purchased.
Seed, fertilizer, and other crop supplies purchased.
Farm equipment bought.
Building materials bought.
Repairs of farm property.
Fuel and oil for farm use.
Insurance and taxes on farm property.
Veterinary, medicine, horseshoeing, breeding fees, and similar expense.
Any and all other money paid out for farm purposes.
FARM.
Increased value of farm property as shown by inventories.
Indirect receipt by inventory.
Indirect expenditure by inventory.
Decreased value of farm property as shown by inventories.
Value of supplies (food and fuel) furnished by the farm to the farmer.
Renting value of dwelling (including its water system, etc.) occupied by the farmer and his family.
Indirect receipts by values furnished by the farm to the personal use of the farmer and his family.
Indirect expenditures by values furnished by the farmer and his family to the farm business.
Value of the unpaid family labor devoted to farm work.
Value of unpaid board furnished by the farm family to paid farm laborers.

Here the farm is considered as the unit of the accounts, and the three distinct classes of receipts and expenditures, with the various items they embrace, are indicated. The three sources of receipts may be termed "cash," "property," and "personal benefit," while the expenditures may be classed as "cash," "property," and "personally furnished." The cash classes will be completed by considering as farm receipts all money received from sales of farm products, or rent of farm property, or for labor for others, and the money spent for everything bought for farm purposes as a farm expenditure.

The property items are covered by the increase (a receipt) or decrease (an expenditure) in the inventory at end of a year as compared with that at the beginning. A man may make improvements on his place, such as building a barn or putting in a system of tile drainage, and thereby greatly increase the value of his farm. As the cost of these improvements may be made up of farm labor and materials included in the farm expenditures, this increase represents a receipt just

the same as crops or live stock sold. It is, however, received indirectly. The only way this receipt will come into the farm accounts is through the inventory. Likewise, a man may have sold during the year a considerable amount of produce he had on hand at the beginning of the year and most of the salable produce of the current year. As these sales are all included in the receipts of the current year, it is necessary that the decreased value of the inventory resulting from the greatly diminished value of salable produce on hand be taken into consideration as an expenditure. This, likewise, can enter the records only through the inventory.

Sometimes an expense item, such as "one horse died, value $100," is found in the expense record on a farm. This item has been added in with the other cash expenditures when in reality it is not a financial expenditure at all. True, it is a loss, but this loss will properly be shown in the decreased value of the horses in the second inventory.

The third class, which has been termed "personal benefit" receipts and "personally furnished" expenditures, is more difficult to determine accurately than the first two, but the proper kind of records will determine the approximate value of these.

RECORD OF BENEFITS FURNISHED BY THE FARM TO THE FAMILY.[1]

The benefits furnished to the family by the farm include food, fuel, and the renting value of the dwelling occupied by the farm family. The latter item requires no record, but may be estimated according to the value, size, conveniences, or other particulars of each dwelling. As the fuel furnished is usually supplied in quantity but once or twice a year, a record of this value should cause little trouble.

The food supplies furnished consist of a multiplicity of items, including milk, butter, eggs, poultry, beef, lamb, pork, veal, fruit, vegetables (both green and dried), and honey. To record the value of all these as furnished may seem a somewhat hopeless task, but the work may be made much simpler than is supposed (see Farmers' Bulletin 964). It is not necessary for farm accounting purposes to keep a fully detailed list of these supplies, though it is often of value and interest to do so. This record should preferably be kept by the housekeeper, who should be provided with a good-sized book for this purpose, as the pages of small books are soon filled and require much carrying forward of subtotals. To quote from Farmers' Bulletin 964:

> It may seem difficult to make record of each bunch of beets, each head of lettuce, each quart of berries, and each quart of milk as taken from the garden or saved from the day's supply of milk. The task is not so arduous as it may seem, however. During the summer, when the farmer's wife is busy, she may

[1] Farmers' Bulletins 635, "What the Farm Contributes Directly to the Family Living," and 964, "Farm Household Accounts," will furnish valuable information on this subject.

not have time to do this every day, or, she may forget. This need not seriously affect the value of the record, since the average housekeeper can estimate very closely the quantity of the various kinds of vegetables, the number of eggs, the quarts of milk, etc., used during the week. Thus she can find time once a week or oftener and bring her record up to date. At the end of the year her record probably would be sufficiently accurate for all practical purposes. It may be well to lay stress on the more important items.

RECORD OF PERSONALLY FURNISHED FARM EXPENDITURES.

This class of farm expenditures includes the value of the farmer's time given to farm work, the value of the unpaid farm labor performed by the members of the farmer's family, and the value of board furnished to paid farm laborers by the farm household. The first of these can be estimated at the end of the year, and should be based primarily on the estimated wages necessary to secure a man who could adequately fill the farmer's place as worker and manager. This value should never be based on what the farmer is able to make out of his business in wages, interest, and net profit, as this would be another instance of "overcapitalizing" and would not be based on actual cost to replace his services.

The value of the unpaid farm labor of the family should be based on the same value, namely, what it would have cost to hire the workers to do the labor that they performed. A record of this may be set down once a week, or oftener if there is a great deal of it.

The value of the board furnished can best be stated by the month for month hands and by the week for day laborers. It should be based on what farmers who board their hands out with others pay, or the amount that must be added to wages if board is not furnished.

In the foregoing discussion the farm has been considered as a unit and, in no case, has the relation existing between the different enterprises on the farm been considered. Consequently the records that have just been explained will not show the profit or loss on each crop or class of stock, since they pertain to the farm as a whole and not to any individual department.

"BALANCING" THE CASH.

In order to make the cash account "balance," that is, to agree with the amount of cash on hand or in bank, record must be made of all items, and the periodical "balancing" of the cash account is a valuable check against omissions and erroneous entries. Inasmuch as the household items are usually bought along with those of the farm, they must in such cases necessarily be included in the records, but if means can be taken to keep them entirely separate from the farm accounts it will result in a saving of time and work in the keeping of the latter. By examination of the account books of eight farms it

was found that of all the cash transactions recorded, the items pertaining strictly to the farm formed 54.6 per cent, the personal items 22.1 per cent, and the household items 23.3 per cent. The average number per year of cash items entered on the books was 577, and of this number but 315 were farm items. Detailed household accounts are of great interest and distinct value, and it is not intended here to offer any discouragement to the keeping of them. The point is that they should, where conditions permit, be kept entirely separate from the farm records, or as nearly so as possible.

The only reason for keeping the household and personal items along with those of the farm is to permit the balancing of the cash account. They add work to farm bookkeeping and are not a part of the real farm records. If they can not be kept separate, it would seem best not to keep the household and personal items in detail, but to combine all these entries for each day into one item and, if desired, let the housekeeper keep the detailed record of them. All the items pertaining in any way to the farm business should be itemized carefully. An illustration of desirable and undesirable detail is given in the two examples following:

Illustration of combining items in entry of household and personal items; also of complete detail in entry of items pertaining to the farm.

COMPLETE AND DESIRABLE.

1919		Item.	Received.	Paid.
Sept.	29	Coal for thrashing, three-fourths ton, at $6		$4.50
		Household expense		.89
	30	Sold 2 tons hay of this year's crop, at $20	$40.00	
		Personal expense		4.55

Illustration of undesirable detail in entry of household and personal items; also of incomplete detail in entry of items pertaining to the farm.

INCOMPLETE AND UNDESIRABLE.

1919		Item.	Received.	Paid.
Sept.	29	Coal		$4.50
		2½ pounds beef		.45
		Bread		.20
		3 pounds rice, at 8 cents		.24
	30	Hay	$40.00	
		Cravat		.25
		Shoes		4.00
		Candy and peanuts		.30

An excellent way to keep the farm records entirely separate is to allow the housekeeper whatever sum may be necessary to cover the household expenses for a week or a month and enter this in the farm records as one item at the time it is paid.

PURCHASES AND SALES ON CREDIT.

Articles bought or sold on credit should not be entered in the cash accounts until the money is collected or paid, for if this is done there may sometimes slip in a duplicate entry of a single item. Of course, a memorandum should be made at the time of sale or purchase so that such items may not be overlooked. Such a memorandum will further be useful at the end of the year, as the list of accounts for the inventory can be made up from it. After the total cash receipts and expenditures have been found for the year, the amounts received or paid during the year on accounts owing or owed at the beginning of the year should be deducted, as these receipts and expenditures pertain to the previous year. Correspondingly, at the end of the year any accounts owed or owing should be added to the cash items in order that all the items actually pertaining to the current year may be included in its accounts (see Table X).

FORMS FOR KEEPING FINANCIAL RECORDS.

There are a number of methods for keeping farm financial records. A form well adapted for handling the cash records is known as a day-book form, and books with this ruling can be bought almost anywhere. It consists of a page ruled with double money columns, the left-hand one to be used for items and the right-hand one for totals. While this form is very simple and can be procured anywhere, there are various other forms, many of which are useful, and in many cases better than the one described. These will be described further along. While farm bookkeeping is not a question of forms, but rather of what accounts to keep and how to keep them, convenient forms are timesavers in the long run. However, the most carefully devised bookkeeping blanks will not show good farm records unless the person using them has a clear idea of the principles and of the purpose in view.

There are two methods of making the entries in the form described. The first, a method commonly used by many farmers, is to enter "receipts" on one page and "expenditures" on the opposite one. Table V illustrates how the record appears when kept in this manner. This is a simple, easy way to keep the records and, as such, it will prove satisfactory. If followed through to the end of the year it will give a complete record of all the cash transactions, but if one wishes to know the aggregate income from the sale of eggs or of milk it will be necessary to go through the year's records and pick out all the items of sales of these products and add them separately. In other words, the foregoing method gives the total receipts and expenditures, but does not classify them.

TABLE V.—*One method of keeping cash receipts and expenditures.*

1918.		RECEIPTS (left-hand page).		
Apr.	2	20 bushels potatoes, at 90c	$18.00	
	2	18 dozen eggs, at 41c	7.38	
	7	2 tons hay, at $22	44.00	
	7	1 cow to J. Brown	77.50	
	7	30 dozen eggs, at 40c	12.00	
	7	3 bushels seed potatoes, at $1.50	4.50	
				$163.38

1918.		EXPENDITURES (right-hand page).		
Apr.	2	1 ton cottonseed meal for dairy	$55.00	
	2	Strap for work harness	.35	
	2	Personal	2.25	
	2	Household	1.60	
	7	Garden seeds	8.00	
	7	Express on seeds	.85	
	7	2 milk pails	2.00	
	7	Household	.86	
	7	Repairing plow	1.20	
				$72.11

In order to ascertain what each farm department returns and each kind of expense amounts to for the year it becomes necessary to classify all the items under their respective headings. This is usually done in another book, known as a "ledger" in which one page is devoted to each heading under which it is desired to classify items, and the operation of classifying or transferring the items to their respective heads is known as "posting." At the end of the year the totals of each heading in the ledger can be taken off and a statement prepared. Table VI illustrates a classified statement of the receipts and expenditures as taken from a farm ledger.

TABLE VI.—*Illustrating a fully detailed summary statement of cash receipts and expenditures on a farm for a year.*

April 1, 1918, to March 31, 1919.

RECEIPTS (CASH).

Farm receipts: :		
Accounts receivable (owing April 1, 1918):		
George Jones paid for corn		$42.00
Notes receivable (owing April 1, 1918):		
Harry Smith paid his note		100.00
Machinery and tools sold		26.90
Forge	$4.65	
Bolster springs	4.00	
Horse collars (3)	8.00	
Junk machinery	5.65	
Crocks, 1-gal. (46)	4.60	

Farm receipts—Continued.		
Buildings supplies sold		$11.89
Shingles (5 bundles)	$7.50	
Nails (60 pounds)	3.99	
Blind hanger	.40	
Work stock sold, 1 horse		35.00
Permanent live stock sold, 1 sow		56.00
Crop sales		1,236.33
Hay (24 tons)	625.50	
Wheat (159 bushels)	333.73	
Clover seed	258.30	
Seed corn	4.20	
Apples	14.60	
Crop product sales (apple butter)		77.50
Live stock sales		212.33
Steer (1,080 pounds at 9 cents)	97.20	
Hogs (2) (580 pounds at 15 cents)	87.00	
Pigs (2)	12.00	
Poultry	16.13	
Live-stock product sales		394.29
Beef (1) (825 pounds; 17.3 cents average)	142.89	
Hide, tallow, and pluck	15.17	
Butter (90 pounds; 44½ cents average)	40.01	
Hog skins (2)	2.00	
Eggs (423½ dozen; 46 cents average)	194.22	
Miscellaneous sales, (muskrat skins)		22.66
Incidental income		20.50
For use of horse	18.00	
For outside labor	1.50	
For rent of tedder	1.00	
Total farm receipts (in cash)		2,235.40
Personal receipts:		
Interest on Liberty bonds	10.00	
Jury fees	4.00	
Total personal receipts		14.00
Total receipts (cash)		2,249.40

EXPENDITURES (CASH).

Farm expenditures:		
Real estate improvement supplies		$429.82
Drain tile, including freight	$272.87	
Use of State ditcher	138.80	
Fencing and gates	18.15	
New machinery and tools		66.30
One-horse wagon	60.00	
Hog trough, metal	4.80	
Shovel	1.50	
Permanent live-stock purchases		165.00
Heifer, two-year-old	55.00	
Bull calf for raising	10.00	
Brood sows (2)	100.00	

Farm expenditures—Continued.		
Market live-stock purchases		$104.00
Steer, two-year-old	$90.00	
Pigs (2)	14.00	
Labor		230.82
Purchased feed		87.08
Corn, ear (74 bushels, at 73 cents average)	54.10	
Oil meal (235 pounds, at $3.54 average)	8.32	
Tankage (100 pounds, at $6)	6.00	
Bran (400 pounds, at $3.50)	14.00	
Poultry feeds	4.66	
Live-stock expense		19.12
Veterinary	8.00	
Dairy salt (1½ barrels)	4.95	
Poultry grit, shell, and charcoal	2.75	
Freight on eggs	2.42	
Breeding fees	1.00	
Crop supplies		195.28
Acid phosphate (2 tons 16 per cent)	54.00	
Seed	78.38	
Lime (5 tons, at $6)	30.00	
Twine (50 pounds, at 25 cents)	12.50	
Thrashing bills	20.40	
Maintenance of machinery and tools		31.96
Repairs	8.14	
New parts	10.15	
Fuel and oil	13.67	
Maintenance of buildings and other land improvements		43.73
Lumber	21.20	
Nails and hardware	3.53	
Cement	4.00	
Carpenter and mason	15.00	
Insurance and taxes		104.23
Interest (on mortgage $200, other $5.60)		205.60
Incidentals		20.47
Total farm expenditures (in cash)		1,703.41
Personal and household expenditures		606.85
Total expenditures (cash)		2,310.26

The second method of making the entries in the record book is to carry the original entry direct to its account in the ledger without first entering it in the "daybook." By this method all items pertaining to the sale of milk and other dairy products will be entered in an account headed "Dairy sales," all items for the sale of eggs and chickens will come under the "Poultry" accounts, etc. This is known as a "direct entry" method or "classified daybook" system and is illustrated in Table VII. The main objection to this method is that it is practically impossible to keep the cash balance in agree-

ment with the record book, and "mixed" accounts are almost certain to result, as the table shows.

Some students of farm bookkeeping recommend carrying the inventory amounts into the ledger accounts, but it is much simpler and better not to do so. No object is to be gained by so doing, as the record is more handy to use in its original form than it would be spread through the ledger pages. Furthermore, in no class of entries are mistakes more likely to be made than in handling these amounts through the ledger accounts. It must always be remembered, however, that any information or interpretation desired from the accounts must always take into consideration both the accounts in the ledger and the inventories.

TABLE VII.—*Cash items entered direct to their respective accounts.*

DAIRY.

1918.		RECEIVED (right-hand page).		
Apr.	9	2 cows to C. Brown	$188.00	
	9	1 yearling to Smith	19.00	
	15	Milk and cream	114.25	
				$321.25
1918.		**PAID (left-hand page).**		
Apr.	2	1 ton cottonseed meal	$55.00	
	2	2 milk pails	2.00	
	10	1 cow from A. Johnson	107.50	
	10	One-half ton bran	15.50	
				$180.00

A third method for recording the financial items is similar in principle to the two already described, but is different in application. It consists of entering the items as in the first method described, with the difference that the pages are ruled in a number of columns and each item is entered in the column headed by the account name to which it pertains. As all the items are entered in proper sequence, it is possible to check them with the cash balance, even though they are classified under their respective headings. This kind of a record is known as a "special column" cashbook and the main objection to it is that unless a book of very wide pages is used it does not admit of many accounts. However, on most farms, only a few accounts are needed. Table VIII illustrates accounts kept by this means.

TABLE VIII.—*Form illustrating special-column cashbook; items entered direct to separate accounts.*

RECEIPTS.

1918.		Item.	Dairy.	Poultry.	Crops.	General.
Apr.	2	2 calves to Jones	$35.00	.....	.....	.....
	3	2 tons of hay to Brown	.....	.....	$44.00	.....
	4	10 dozen eggs, at 40 cents	.....	$4.00	.....	.....

TABLE VIII.—*Form illustrating special-column cashbook, etc.*—Continued.

EXPENDITURES.

Apr.	2	1 ton wheat bran	$40.00			
	2	10 bushels seed oats, at $1			$10.00	
	7	2 bags chicken wheat		$2.50		

A fourth system is known as the "bank book" or "check" method. To practice this method it is necessary that all the farm funds be passed through the bank account. When funds are deposited in the bank a duplicate deposit slip is made out, on the back of which is recorded the articles for which the cash was received. Likewise when checks are drawn the articles for which the money is expended are noted on the check-book stub, or special checks may be used bearing on their face a notation of the object for which drawn. This is a very simple scheme and has much to recommend it.

The duplicate deposit slips and check stubs, carefully preserved, form a complete financial record, and the records automatically agree with the cash balance. There is one inconvenience encountered in this method. There are many expenditures of a few cents here and there, and it is impracticable to draw a check for each of these petty amounts. There are several means of overcoming this difficulty. One is to open an account at the store for these petty items and draw a check periodically to pay for them. The items can then be classified on the check stub. Another means is to adopt what is known as the "petty cash" method. A small sum of money is set aside to pay these minor items and charged to a petty cash account. From this the little expenses are paid, and when the sum is depleted a check is drawn to cover the total of items paid out of it, classifying the items on its stub, and the check is then cashed and the money put back in the petty cash fund.

A fifth method is known as "the farm diary method" and consists of using a book supplying a separate page for the records of each day throughout the year. This method is thoroughly explained in Farmer's Bulletin 782 and will only be mentioned here. The main objection to it is that the records must be "posted" as described in the discussion of the first method given, but it has the considerable advantage of providing a definite system for the recording of all the miscellaneous happenings which are of interest and value.

No matter which method is decided on for keeping the cash records, the object is the same in every case, namely, to secure a complete detailed list of all the sources of revenue and all the things for which money is spent, with the amount under each head. Table VI has already illustrated such a detailed list and Table IX is presented to

illustrate how, if so much detail is not desired, the data may be summarized under more general headings. The fully detailed summary is, however, to be recommended.

TABLE IX.—*Illustrating a summary of cash receipts and expenditures on a farm for a year under general nondetailed headings.*

April 1, 1918, to March 31, 1919.

RECEIPTS (CASH).

Farm receipts:		
Accounts and notes receivable	$142.00	
Crop sales	1,236.33	
Crop-product sales	77.50	
Live-stock sales	303.33	
Live-stock-product sales	394.29	
Miscellaneous sales and other farm income	81.95	
Total farm receipts		$2,235.40
Personal receipts		14.00
Total receipts (cash)		2,249.40

EXPENDITURES (CASH).

Farm expenditures:		
Live-stock purchases	$269.00	
Real-estate improvement and maintenance	473.55	
Machinery purchases and maintenance	98.26	
Live-stock expense	106.20	
Crop expense	195.28	
Labor	230.82	
Miscellaneous farm expenditures	330.30	
Total farm expenditures		1,703.41
Household and personal expenditures		606.85
Total expenditures (cash)		2,310.26

CLOSING THE BOOKS.

"Closing the books," in the ordinary acceptance of the term, is the process of entering the balance of each ledger account on the lesser side of the account, bringing down equal totals on each side, and ruling the account off. The balances are then carried to a "profit and loss" account, if the ledger account ruled off is income or expense account, or brought down below the ruling as a new balance, if the account ruled off is an asset or liability account.

This process is usually stressed as very important by some students of farm bookkeeping. Often the inventory amounts are brought on the books just prior to starting to "close" them, and the farmer bookkeeper following this method soon finds himself floundering in a

maze of cross entries, balance transfers, and rulings bewildering even to many men more trained in the handling of figures than he.

No such process is necessary or advisable in simple farm bookkeeping. If the methods outlined in this bulletin are adhered to they will give all the information the most approved, detailed, and technically correct "closing" of the books will give, will present the information in just as interpretable form, and will be accomplished with considerably less work, worry, and confusion of detail. It is recommended, however, that the various ledger accounts be marked or checked off as their respective balances are transferred to the summary of receipts and expenditures (Tables VI and IX) in order that they may not inadvertently be included in the totals for the coming year.

DETERMINING NET FARM INCOME AND NET FARM PROFIT.

Having ascertained the total farm receipts and the total farm expenditures and the value of the interrelated items, the next thing is to determine the net farm income. The term "farm income" or preferably "net farm income" (as the receipts themselves are sometimes termed farm income) is used to denote the balance left after the total of farm expenditures is deducted from the total of farm receipts. Out of this balance, or the net farm income, must come a fair return for the farmer's labor and for the use of his capital, before any of it may be termed net profit. (See Table X.)

TABLE X.—*Illustration of method of determining net farm income and net farm profit from inventories and cash accounts, making due allowances for cash items not pertaining to the particular year and for all noncash, interrelated items between the farm and the family.*

INVENTORIES (PHYSICAL OR TANGIBLE ONLY).

	Value.			
	Apr. 1, 1918.	Apr. 1, 1919.	Increase.	Decrease.
Real estate	$9,600.00	$9,600.00	.....	.....
Live stock	1,185.00	1,613.00	$428.00	.....
Machinery and tools	1,633.50	1,498.25	.....	$135.25
Farm produce	648.00	795.60	147.60	.....
Purchased feeds and supplies	7.58	57.45	49.87	.....
Totals	13,074.08	13,564.30	625.47	$135.25
Subtracting the lesser	.....	13,074.08	135.25	.....
Balance, net increase (a farm receipt)	.....	490.22	490.22	.....

FARM RECEIPTS.

Financial receipts:			
Cash receipts	$2,235.40		
Add value of current year sales not yet received in cash (see financial inventory)	68.00		
	2,303.40		
Subtract payment of last year's bills included in cash receipts (Table VI)	142.00		
Net financial receipts applicable to this year		$2,161.40	
Property receipts:			
Net increase in inventory (a property receipt)		490.22	
Personal benefit receipts:			
Value of food supplies furnished family	$439.74		
Value of fuel furnished family	58.00		
Renting value of farm dwelling	180.00		
Total personal benefit receipts		677.74	
Total farm receipts			$3,329.36

FARM EXPENDITURES.

Financial expenditures:			
Cash expenditures	$1,703.41		
Add amount of current year purchases not yet paid for in cash	200.00		
Total financial expenditures		1,903.41	
Property expenditures: (None; there was a net inventory increase; not a decrease.)			
Personally furnished expenditures:			
Value of family labor on farm work	$110.00		
Value of board furnished laborers	60.00		
Total personally furnished expenditures		170.00	
Total farm expenditures			2,073.41
Net farm income			1,255.95
Income earned by capital and labor:			
Interest at 5 per cent on total value of physical inventory, April 1, 1918		653.70	
Deduct interest paid on mortgage (see page 36)		200.00	
		453.70	
Value of farmer's labor (estimated)		600.00	
Total deduction for use of capital and labor			1,053.70
Net farm profit			202.25

The first step is to determine the net inventory increase or decrease, which is then carried below as a property receipt or a property expenditure, accordingly as it is found to be an increase or a decrease.

It will be noticed that in arriving at the inventory increase Table X does not include the accounts receivable, accounts payable, or cash on hand. This is because the money which is owed the farm has been added to the cash receipts, that which is owed by the farm to the cash expenditures, and the difference in cash on hand is reflected in

the difference between cash receipts and expenditures. Thus, while the complete inventory is properly used when there is no other record, as explained under Type I on page 8, only the *physical* inventory is used when figuring farm income and profit. The accounts payable and receivable are added to the receipts and expenditures because they really are such, and actually pertain to the year for which the statement is prepared. These points must be thoroughly grasped, and they are worthy of study.

The financial receipts and expenditures applicable to the year are determined by adjusting the cash receipts and expenditures by *taking out* all items included therein that do not rightfully pertain to this year, and by *adding in* all items of the year's business not yet settled for.

One item of this adjustment will require some explanation, namely, the deducting of the $200 interest paid on the mortgage. This is done to prevent duplication, for if interest on the entire value of the physical property is deducted in ascertaining the net farm profit and, in addition, the interest actually paid on the mortgage, covering a part of the same property, a double interest charge is made on the part covered by the mortgage. The interest paid on the mortgage has already been included as a deduction from income, as it is included in the total farm expenditures.

The duplication is avoided, as shown in Table X, by deducting the amount of interest actually paid from the interest as calculated on the value of the physical assets. This process closely follows the facts, as the capital, in this case, on which interest charges should be figured is not the total value of the property, but the remainder, or "equity" as it is sometimes called, after the amount of the mortgage is deducted.

Table X is worthy of careful study by all farmers interested in accounts. Some men have the idea that their success is measured only by the increase in cash, cattle, crops, etc., on hand at the close of the year, others take into account the complete inventories, but very few consider the value of the items representing the interrelation between family and farm. Taking the data given in Table X, which are from actual farm records, the benefits received counteract in value the values furnished by the family and leave a balance of $507.74, which is as truly farm income as that received from the sale of produce to outsiders. If these items are not taken into consideration, the facts will not be presented in their true light, and consequently the accounts are not entirely successful and may be grossly misleading. The first, last, and only object of records should be to present the facts, all the facts, and nothing but the facts as closely as possible.

When the farmer determines the facts of his year's operations in the manner exemplified in Table X, he has data that will permit a

comparison of his lot in life with that of the city dweller working for a salary and with that of the city business man. His data, summarized in this way, will allow him to study his own business from the correct viewpoint.

INTERPRETATION AND USE OF FARM ACCOUNTS.

In the foregoing pages are outlined the reasons for farm bookkeeping, and methods and forms are suggested for bookkeeping on ordinary farms. The question arises, "How can the information gained by these records be applied to the various phases of the farm business?" Time and energy spent in keeping accounts are absolutely wasted unless an intelligent use is made of them. Moreover, one must not suppose that many records are needed before any information of value can be gleaned from them. It is surprising what useful information can be secured from a few simple records. It is even more surprising, however, what false interpretations can be drawn from a set of farm accounts by one who does not understand their real meaning. The information to be gained from interpretation of the results will be a matter of the requirements of each individual, but it ordinarily falls in one of the several groups which will now be illustrated.

WHAT HAS BECOME OF THIS NET FARM INCOME?

That is a question most commonly asked by farmers when their records show that their farm income has been larger than they had any idea of. In the case set forth in Table X this very question was asked, and answered as follows:

Net farm income (i. e., the amount out of which must come the household and personal expenses and the progress, financially, of the farmer)		$1,455.95
Add any personal income (see Table VI)		14.00
Total income available		1,469.95
Household and personal expenses:		
Cash (see Table VI)	$606.85	
Supplies and renting value from farm	677.74	
Gross household and personal expense	1,284.59	
Value of board and family labor (deduct)	170.00	
Net household and personal expense		1,114.59
Interest actually paid on mortgage		200.00
Actual financial progress (see Table I)		155.36
Total income accounted for		1,469.95

This statement clearly answers the natural question above. By referring to page 9 it will be seen that this is the computation there

given, except that it is reversed, and that the interest paid on the farm mortgage does not enter into it.

LABOR INCOME AND EFFICIENCY FACTORS.

The question that naturally arises next is: "How do results on my farm compare with those of other farmers?" The method developed by farm economists for these comparisons involves the relation of farm "labor incomes" to certain elements of management which are termed "efficiency factors." Labor income is that part of the net farm income left after allowing for interest on investment; it is a term used by farm economists to represent the total amount the farmer receives for his labor and managerial ability as a farm operator. This labor income can be readily determined from a statement like Table X by adding the estimate of the value of the farmer's services ($600) to the net farm profit ($202.25). If there should be a net farm loss, instead of a profit, the amount of the loss should be deducted from the estimated value of the farmer's services. If the loss is larger than this estimate, the latter should be deducted from this loss. In this case there would be what is termed a "minus labor income," which means that the year's results have not even paid the proper interest on the investment by the amount of the minus labor income.

This term, "labor income," is of value to the economist in studying the relative profitableness of different farms as related to the average farm, the better farms, and the poorer. It is not generally used in farm bookkeeping, as here only a single farm is being studied by its operator. If it is desired to compare one's labor income with those in published data on farm economics, it can be determined as above explained.

For a study of all the efficiency factors that may be compared, the reader is referred to the list of publications in the back of this bulletin. Some of these that may be mentioned here are: Proportion of capital invested in each kind of farm property, proportion of income derived from various sources, income per cow, per brood sow, or per acre of crops, acres of crops per man and per work animal.

COMPARISON OF FARM PROFITS WITH BUSINESS PROFITS.

Another comparison that may be useful is to compare one's profits with those of some business or corporation in which one has a part interest or with which he is familiar. Many men who have taken up farming after business careers will find it interesting to compare results. This is usually done on a percentage basis. The merchant sizes up his profits on the basis of the percentage they are of the total sales, the corporation's profits are reflected in terms of rate of dividends and surplus increase as related to the total capital. For

the farmer who may wish to make such comparisons the following suggestions are offered:

To find the percentage of profits on the business done, proceed as follows, referring to Table X:

If the food and fuel furnished the family have been charged in at market value at the farm, as they should be, the value of these should be added to the financial receipts. This gives the total business done. Find the sum of the net farm profit and the interest on investment. This gives the business profits as understood by the merchant, who usually allows himself a salary, but does not charge in interest as a business expense. Find what per cent the business profit is of the total business and the rate of profit on business done is the resulting figure. Thus:

> $2,161.40 plus $497.74 equals $2,659.14; the total business done.
> $202.25 plus $653.70 equals $855.95; the profit on business done.
> 856 divided by 2,659 equals 0.32 or 32 per cent, rate of profit.

To find the relation the profits bear to the total capital, it is only necessary to ascertain what the capital is, as the total profits are already worked out. It is important in making this comparison that only the actual capital be used. To find this the amount of the mortgage must be deducted and, as interest actually paid thereon has not been included in expenses, it must now be included (as we are considering net capital, not gross) just as a corporation includes in its expenses the interest on its bonds. This may be done as follows, referring to Table X and previous computations:

> $855.95 less $200 (interest on mortgage) equals $655.95, which is the total profit from a corporation standpoint.
> Total capital $13,074.08 less mortgage $4,000 equals $9,074.08, or net capital (that is, capital from the corporation standpoint).
> 656 divided by 9,074 equals 0.072, or 7.2 per cent profit on capital.

It must be understood that these are not presented as samples of profits that the average farmer receives, but simply as illustrations of methods. While the accounting figures exhibited throughout this bulletin are based on actual farm figures, they are taken from a period of war conditions and are therefore not typical in any sense.

CONCLUSION.

As already stated, no attempt has been made in the foregoing pages to treat of the subject of cost accounting. It has been the aim rather to deal with as simple a record as possible and at the same time have the results of sufficient value to be of use to the farmer. The trained agricultural student or the business-college graduate will no doubt desire a more detailed system than has been outlined here, and in this desire he is perfectly justified. But the average farmer is not a trained accountant, and the very nature

of his work is such that it is hard for him to do clerical work. After being in the field all day, or out in a cold, biting wind, it requires considerable exertion to write up a set of books in the evening. The farmer is trained to do physical work, and, although he is usually intelligent and capable when it comes to deciding important matters, it is often difficult for him to do clerical work of this character. When physically tired it is doubly difficult to do such work as adding a column of figures.

Farm bookkeeping is a matter of adapting simple methods to the farmer's needs. It is not a question of forms or having the accounts on the right side of the page or of having them balanced in a certain way, but it is a question of a correct knowledge of principles which will lead to an understanding of the facts as they exist on the particular farm in question.

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FARMERS' BULLETIN 511
UNITED STATES DEPARTMENT OF AGRICULTURE

Corr. Dec. 1923

FARM BOOKKEEPING

See revised edition

Expenditures

1919				
Aug	2	Stock food for Hogs		
	5	Lumber for fence gate	3	36
		Personal		05
		House hoes		90
		Nails		55
				40
				89
	8			20
				00
				75
	9		10	00
	11		8	75
		[illegible]		25
		Gas for car	1	89
	15	" " "	1	89
		Personal		75
		57 lbs. lead arsenate for potatoes	19	38
		15 sacks lime " "	7	50
		1100 lbs Copper Sulphate "	33	00
		Wages, Jack Howe	10	00
		" Tom Ferguson	5	50
		Breeding fees, Hogs	4	00
	19	Horse shoeing	4	00
		Grinding 25 bags barley	3	00
		Household	4	75
		Personal	1	50
	22	Mag [illegible]	10	00

ADEQUATE RECORDS are necessary to the efficient management of any business. The farmer, to be successful, must be a business man as well as a grower of crops and producer of live stock. As a business man he should have suitable business records.

Farmers, as a rule, are highly individualistic in their methods, and farm business conditions vary widely. Accordingly, ready-made systems of farm accounts seldom bring out all the facts that the farmer ought to know. Systems must be developed to fit each man's requirements, and efforts to shape one's needs according to a prepared system not based primarily on these needs will almost inevitably result in failure.

Getting a knowledge of accounting principles is the first and most important step toward establishing an accounting system suited to one's individual needs. There are many degrees in farm accounting, from the simple to the extended and complex, but it is obviously impossible to discuss them all in a single bulletin. It is the purpose of this bulletin merely to outline the principles of simple farm bookkeeping.

Washington, D. C.

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FARM BOOKKEEPING.

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FARMING IS A BUSINESS, and, to be successful, it must be conducted in a businesslike manner. It involves the production and sale of commodities, just as does manufacturing. The business man, whether in factory or on farm, should be constantly considering two questions:

(1) What profit is my business making?

(2) How can that profit be increased?

The first of these must be answered before an intelligent effort can be made to answer the second. Proper accounting leads directly to the answer to the first question, and hence it is essential to any well-thought-out plan to increase profits.

The problem of the farmer is to meet conditions on his own farm in a way that will give him the greatest net returns, year in and year out, for the use of his capital, his labor, and his managerial ability. Before he can be considered a successful farm operator he must produce results that will cover the value of all these. Capital can earn interest without labor on the part of its owner, and labor can earn wages without owning any capital. The farmer, utilizing both in the conduct of his business, should secure returns that will cover both interest and wages. Not until both of these have been more than covered can any profit be credited to the farming operations. Nothing but return in excess of interest and wages can properly be considered as net profit.

There is reason to believe that many farmers, owing to a lack of proper records, do not know what returns they actually receive, nor how these compare with what they should receive for their work and

the use of their capital. Doubtless many are living on the interest on their capital, making small wages or none, and no net profits.

A very large number of farm problems have been solved by the experience of farmers—far more, in fact, than have been worked out in any other way. There are some problems, however, that have not been solved in this manner. The problem of farm architecture and that of farm accounting are two of these. One reason for this is that much of the instruction the farmer has had on these two subjects has been misleading. As in architecture, so in accounting, the main work that has been done has related to city conditions and is not applicable to conditions on the farm. Most farmers who have tried to keep books have used the systems of city bookkeepers, which are not adapted to farm accounting. Even where these systems have been modified in the attempt to meet farm needs, they have usually failed to meet the farmer's requirements.

The difference between bookkeeping and cost accounting should be definitely understood. Bookkeeping is the keeping of records that will set forth the income, cost, and profit of the business as a whole or complete unit; cost accounting involves the finding of cost, returns, and profit on production units—on a pound of beef, a quart of milk, a bushel of grain, etc.

This bulletin has not been prepared to present any particular systems of accounts for farm use,[1] but is rather a discussion of some of the important principles that are applicable to bookkeeping on the farm. It is believed that the farmer who studies it sufficiently to grasp these principles will be enabled to select or devise a system that will be adequate for his particular needs.

COMPARISON OF COMMERCIAL AND FARM BOOKKEEPING.

In commercial bookkeeping, which has been a subject of study and in process of standardization through several centuries, systems of bookkeeping have been developed which fulfill the needs and requirements of a great majority of merchants. Moreover, in the world of commercial affairs there is considerable similarity in these needs and requirements.

In farm bookkeeping these conditions do not exist. Not only do peculiar conditions occur on almost every farm as to the type of business, size, and opportunities and facilities for record keeping, rendering it difficult to apply a uniform system prepared for use under entirely dissimilar conditions, but the subject of farm book-

[1] Farmers' Bulletins 572 and 782, entitled "A System of Farm Cost Accounting" and "The Use of a Diary for Farm Accounts," respectively, present two more or less standardized systems of farm accounting.

keeping has received little or no attention until the last few decades, and consequently little progress has been made toward the desired end.

Farm bookkeeping principles, however, apply at all times and on all farms, and when these are thoroughly understood and all conditions studied, the development of a proper system to fit these conditions can be taken up with every probability of success.

IMPERSONAL CHARACTER OF BUSINESS.

In order to understand bookkeeping principles, the business should be considered as entirely separate from the individual owning the business. That is, in all relations between it and its owner the records should be handled exactly as if business and owner were two persons. The necessity of this relation is fully recognized in the commercial world, and lack of comprehension of it is one of the causes which prevent many farmers from fully understanding the principles of accounting. The merchant rarely takes goods from his store for his personal use without charging them to his own personal account, just as though they were sold to any other customer. He is usually fully aware that otherwise it would be impossible for him to know the actual state of his business affairs. On the other hand, the farmer ordinarily devotes the property of his business to a considerable extent to his own personal uses without a thought as to the accounting consequences, and as a result may get a false idea of the results of his farming operations when he balances his accounts.

On the farm, where the personal affairs of the owner, his household, and the farm affairs proper are interwoven, this point of view is admittedly difficult to acquire, but nevertheless it is very necessary to acquire it.

In order to carry out this idea it is a good plan to consider the general funds received for farm products as belonging to the farm, and for the owner to maintain a separate purse for his personal requirements, refilling it from time to time from the farm funds, and charging his personal account on the farm books with the amounts so used. This idea, as is explained elsewhere in this bulletin, may be carried a step further by establishing a separate purse for the household expenses, allowing the housekeeper a certain amount weekly or monthly on which to run the house. Such practices are well calculated to give a man a good perspective of the relations existing between the finances of the farm, the household, and himself, and are more generally satisfactory to all concerned than the common practice of having a single purse for all these purposes.

APPLICATION OF DOUBLE-ENTRY PRINCIPLE.

While it is true that success in farm accounting is not a matter of forms or blanks, but one of using well-defined principles, the double-entry idea can not be lightly disposed of, as some writers on farm accounting have tried to do, by stating that it is a mere matter of form. It can not be stated too positively that double entry is not simply a form of bookkeeping. It is an indispensable feature of correct accounting.

Briefly stated, this principle is based on the fact that every business transaction has, for each party involved, two distinct sides. One value is *acquired*, another is *surrendered*. For instance, a person selling a horse acquires cash value and surrenders horse value. If the horse is sold on credit to John Smith, account value (the fact that John Smith owes this value) is acquired instead of cash value. When he pays for the horse, cash value is acquired and account value (he no longer owes anything) is surrendered. If the records do not take account of both sides of each transaction they will not show the facts, and will, therefore, be misleading, and worse than useless.

Violations of this principle are common, and lead to the most erroneous conclusions in farm cost accounting. Carrying the value of manure as a credit to the cattle account and not charging this same value to the crop accounts is an example of a common way in which this principle is violated, and many other instances might be cited. No matter what the transaction, this principle holds good and should never be violated.

In the case of cash transactions where a cashbook is used, the double-entry principle is automatically followed. Entering the money received and giving the description of what was sold for it, charges the cash account with the value on the one hand, while the crediting of the proper account with the value of the thing sold completes the "double entry."

RULES FOR DETERMINING CHARGES AND CREDITS.

As a usual thing it will not be found difficult to determine for each transaction which account to charge and which to credit. The general rule may be briefly stated thus:

Charge that account which acquires the value.
Credit that account which surrenders the value.

Where strictly cash accounts are kept little trouble will be experienced, as all cash received is *acquired* and by the rule is a charge to cash, while the corresponding credit is carried to the account which *surrendered* the value for which cash was received, and vice versa.

As elsewhere explained, this is automatically performed in a simple account of cash receipts and expenditures.

A more difficult problem comes up in determining when to charge an expenditure of cash to expense and when to investment (purchase) accounts. Also it is sometimes hard to tell when to credit a receipt to an income and when to an investment account. The rules in this regard are almost as simple as the foregoing, and may be stated briefly as follows (examples given below):

(1) Charge to expense accounts all those things which will be consumed as soon as used.

(2) Charge to investment accounts those things which will be used over and over again in the course of the farm business or which are bought for resale in the regular course of the business.

(3) Credit to investment accounts receipts from sales of articles which have formed part of the farm equipment or permanent plant.

(4) Credit to income accounts all receipts for products of the farm or for things incidental to such production.

(5) Credit to expense accounts all receipts for expense *rebates* and for things previously charged to expense accounts.

Examples of items falling within the scope of the foregoing rules are:

Rule 1: Seed, twine, feeds, wages, etc., parts for machinery, building repairs.

Rule 2: Work stock, cows for the dairy herd, breeding animals, machines, drain tile, fencing, etc., and animals bought for fattening and resale.

Rule 3: Old machinery and machinery junk, old lumber, work stock, animals from the permanent herds, etc.

Rule 4: Milk, eggs, crops raised and sold, market live stock, etc., and receipts for labor and machine work done by farm labor.

Rule 5: Feed bags; surplus purchased feed, seed, and twine; spare machine parts sold, etc.

While the foregoing rules will doubtless prove of assistance in analyzing transactions to determine the proper charges and credits, there will sometimes occur transactions which seem to fall within what may be called the "twilight zone" between two rules. In such cases good judgment alone must be relied on, as no set of rules will cover all cases.

TYPES OF FARM RECORDS.

Farm records may vary from the taking of an annual inventory to carrying the most complete and detailed system of cost accounts. The following outline illustrates three types of farm accounting from the simplest to the most complex.

Outline of types of farm records.

Type.	Records necessary.	Information that may be obtained.
I. Property record....	1. Inventories made once a year.	1. Investment in each kind of farm property and net worth of the farm as a whole. 2. Increase or decrease in net worth during the year.
II. Farm bookkeeping. (Accounts with the farm as a unit.)	1. Inventories made once a year. 2. Financial records. 3. Value of supplies furnished by the farm to the family. 4. Value of board furnished by family to paid farm laborers. 5. Unpaid family labor devoted to farm work.	1. Investment in each kind of farm property and net worth of the farm as a whole. 2. Increase or decrease in net worth during the year. 3. Classified summary of farm receipts and expenditures. 4. Farm income. 5. Net farm profit. 6. Household and personal expenses. 7. Value of food, fuel, and use of house furnished by farm to family.
III. Farm cost accounts. (Accounts with the farm and with each farm product and department as a separate unit.)	1. Inventories made once a year. 2. Financial records. 3. Value of supplies furnished by the farm to the family. 4. Value of board furnished by family to paid farm laborers. 5. Value of other perquisites furnished by farm to paid farm laborers. 6. Unpaid family labor devoted to farm work. 7. Labor record. 8. Feed records. 9. Livestock production records. 10. Crop supply and yield records.	1. Investment in each kind of farm property and net worth of farm business as a whole. 2. Increase or decrease in net worth during the year. 3. Classified summary of farm receipts and expenditures. 4. Farm income. 5. Net farm profit. 6. Household and personal expenses. 7. Value of food, fuel, and use of house furnished by farm to family. 8. Cost per hour of man labor. 9. Cost per hour of horse labor. 10. Complete distribution of all costs. 11. Complete distribution of all income. 12. Complete allocation of all profits and losses. 13. Cost of production in each department. 14. Margin between cost and market value. 15. Efficiency factors in farm management.

PROPERTY RECORD.

The first type includes only the farm inventories made once each year and is valuable as a means of determining the value of the farm property and of showing whether the farmer has made progress in a financial way during the year or whether he has gone back. It measures only the amount of this progress or going backward. It is well to emphasize this point. The increase or decrease in net worth does not represent the profit or loss on the farm business, since it is affected by the affairs of the farm family. If one knew the amount of the household and personal expenses, the value of the unpaid farm labor of the family, and also the value of the interrelated transactions between the farm and the family (see Type II, Nos. 3 and 4), it would be possible to determine, from these data and the inventories, the actual farm income.

For instance, if the cash expenditures for household and personal purposes were $606.85, the personal income $14, the value of the interrelated items 3 and 4, $677.74 and $60 respectively, and the value of the family labor, $110, the following calculation would disclose the actual farm income:

Net inventory increase		$155.36	
Add:			
Household and personal cash expense	$606.85		
Value of supplies furnished family	677.74	1,284.59	
			$1,439.95
Subtract:			
Value of board furnished by family	60.00		
Value of unpaid family farm labor	110.00		
Personal income	14.00		
			184.00
Balance (represents income from farm)			1,255.95

Briefly put, to find the farm gain it is necessary to add to the increase in inventory value the value of those things furnished to the family by the farm and to subtract the values furnished to the farm by the family.

In order to determine the net farm profit, the sum of the interest on the farm capital and the value of the farmer's time must be deducted from the farm income, as will be explained further on.

In this computation must be taken into account the amount of income, if any, from personal or nonfarm sources. Dividends or interest received from outside investments, jury and witness fees, and gifts of money received are common examples of such items. The amount of personal income should be included in the items to be subtracted from the amount of inventory increase, if this amount has been included in the general purse, and therefore takes the nature of supplies (cash) furnished by the family (which includes the farmer) to the farm.

FARM BOOKKEEPING.

The second type comprises the inventories, financial records, and records of interrelated values. Financial accounts are more generally kept by farmers than any other kind of records. Many farmers, however, after keeping financial accounts for a year, find they can get little valuable information from them in return for the time and attention devoted to them. This is because they have no inventory records. The inventories are just as necessary for the proper and intelligent interpretation and understanding of the financial accounts as are the financial accounts themselves. They are the milestones of business, corresponding to the balance sheets of banks and other commercial and manufacturing concerns, and are always necessary, no matter what other accounts are kept.

FARM COST ACCOUNTS.

The third type represents all the records necessary to complete farm cost accounts, which, if successfully carried out, will give the actual, as well as the relative, cost and profit on all the farm enter-

prises as well as other valuable data. Complete cost records can be obtained only by the outlay of much time and close attention to detail. A man who works hard all day at manual labor rarely has either time or inclination to spend much of his leisure time in this work. Only when the conditions seem to warrant the assumption that the accounts will be carried through to a successful end should they be attempted. While this bulletin, in a general way, touches upon some of the principles applicable to farm cost accounts, it is concerned in the main with a discussion of the records contained in type II.

THE FARM INVENTORY.

The term "inventory" is used to designate a list of property and property values. As has been previously pointed out, the annual farm inventory is a sort of guide or mile-post which indicates to a farmer just how he stands, financially, year by year. Without it no other records can be correctly interpreted.

A farm inventory is simply a statement showing what land, buildings, live stock, produce, supplies, etc., are owned and what they are worth at the time the inventory is taken. It shows also the amount of cash on hand and the amounts owed or owing at that date. It is a list of farm property and farm debts. To be of the greatest value it should be itemized to show separately what the farm is worth, the value of each head or group of live stock, the value of each machine or tool, the products for sale or feed, the materials and supplies on hand, the amounts owing by the farm, and the amount of cash on hand or in the bank. It must also show, under "Liabilities," the amounts of all debts the farmer owes other people. Table I exhibits a good sample of a farm inventory. It will be noted that it is divided into several parts or divisions as has been previously recommended.

TABLE I.—*Sample of a farm inventory, showing in a general way how this valuable record is prepared.*

Divisions and items of property.	April 1, 1918.			April 1, 1919.		
	Quantity.	Value per unit.	Valuation.	Quantity.	Value per unit.	Valuation.
REAL ESTATE:						
Land and improvements.....acres..	120	$80	$9,600.00	120	$80	$9,600.00
LIVE STOCK:						
Cows, dry and in milk	1	125	125.00	1	100	100.00
Heifers	1	40	40.00	2	60	120.00
Calves	2	30	60.00	4	25	100.00
Steers	1	115	115.00	.....	.....	.....
Total cattle	.....	.....	340.00	.....	.....	320.00
Horses—						
Jim, 12 years old	.....	.....	200.00	.....	.....	175.00
Jack, 14 years old	.....	.....	175.00	.....	.....	160.00
Jen, 8 years old	.....	.....	225.00	.....	.....	225.00
Jess, 20 years old	.....	.....	35.00	.....	.....	Died.
Total horses	.....	.....	635.00	.....	.....	560.00

TABLE I.—*Sample of a farm inventory, etc.*—Continued.

Divisions and items of property.	April 1, 1918. Quantity.	Value per unit.	Valuation.	April 1, 1919. Quantity.	Value per unit.	Valuation.
LIVE STOCK—Continued.						
Swine—						
Brood sows	1	$75	$75.00	7	$60	$420.00
Boar				1	45	45.00
Pigs	3	20	60.00	24	6	144.00
Total swine			135.00			609.00
Poultry	50	1.50	75.00	62	2	124.00
Total live stock			1,185.00			1,613.00
MACHINERY AND TOOLS:						
Plows, walking, 12-inch	2	10	20.00	2	8	16.00
Plows, sulky, 16-inch	2	75	150.00	1	65	65.00
Disk harrow, double, 8-foot	1	20	20.00	1	17	17.00
[All items listed but not shown here]						
Total machinery and tools			1,633.50			1,498.25
FARM PRODUCE:						
Barley.....bushels	32	2	64.00	124	1.50	186.00
Oats.....do	284	1	284.00	302	.80	241.60
Corn, ear.....do	30	1	30.00	50	.75	37.50
Buckwheat.....do	17	1	17.00	20½	1.50	30.50
Hay.....tons	11	23	253.00	15	20.00	300.00
Total farm produce			648.00			795.60
PURCHASED FEEDS AND SUPPLIES:						
Bran.....pounds	100	.03½	3.50	250	03½	8.75
Shorts.....do	50	.03¾	1.88			
Lime.....tons				5	6.00	30.00
Fence posts				50	35	17.50
Grain bags	22	10	2.20	12	10	1.20
Total feed and supplies			7.58			57.45
NOTES AND ACCOUNTS:						
Harry Smith, note for cow			100.00			
George Jones, for corn			42.00			
John Williams, for corn						63.00
Henry Robinson, for work						5.00
Total notes and accounts			142.00			68.00
CASH ON HAND AND IN BANK			256.35			195.49
Total value of "assets" (property *owned*)			13,472.43			13,827.79
NOTES AND ACCOUNTS OWING:						
Farm mortgage			4,000.00			4,000.00
Samuel Grey for hogs						200.00
Total "liabilities" (amounts *owed*)			4,000.00			4,200.00
SUMMARY:						
Total assets			13,472.43			13,827.79
Total liabilities			4,000.00			4,200.00
Balance or "net worth"			9,472.43			9,627.79
[Increase $155.36 for the year.]						

DIVISIONS IN A FARM INVENTORY.

Real estate.—Under this heading are placed the farm land, buildings, fences, woodlots, and all items of land improvement, for the farm is thought of as embracing all of these in a single unit. If the farm is sold all of these go with it.

Live stock.—All the different classes are entered separately, as horses, cattle, hogs, poultry, and the like. Each class is itemized by individuals or subclasses as far as is practicable. Thus the total amount invested in horses or any other class of stock can be found for any year. In taking this part of the inventory each animal may be given a separate value, or some method may be followed that enables each individual or class to be recognized in taking the next inventory.

Machinery and tools.—This division contains the largest number of items to be listed, as this part of the equipment on a farm is always varied. In taking this part of the inventory it is important to use care not to overlook any item, for if certain implements are overlooked in one inventory and then included in the next, confusion and inaccuracy result. If carefully taken and each item listed separately, a machinery and tool inventory will fill several pages of a good-sized book. If such detail is not desired, the minor tools of small value may be grouped in a single item and a lump valuation given, but such a course is not advisable. This part of the inventory, carefully made at the beginning and checked up each year, is a help in locating minor tools. It is surprising what a large number of these small tools there are on a farm, and what a considerable number disappear during a year. All farmers know how easy it is to lose a hammer or a wrench, but an old wagon never disappears.[1]

Inventory day is a convenient time to call in all tools that have been loaned out. Small tools have a habit of changing owners if they remain away from home too long.

Produce, feed, and supplies.—Some items in these divisions are hard to estimate closely, as, for instance, the number of tons of hay, straw, and other produce in bulk,[2] but experience, conservatism, and good judgment will surmount this obstacle and give fairly accurate results.

Financial items.—This division includes all "book" items, sometimes known as "financial" or "intangible" items, as distinguished from the other items which are termed "physical" or "tangible" property. These consist of the cash on hand and in the bank and the amounts due the farm from others.

The sum of the property values embraced in the foregoing five divisions will be the value of the "assets" or property *owned*. This does not necessarily constitute the net worth, as the "liabilities" or amounts *owed* have not yet been listed, summed up, and deducted, so another division of the inventory should now be constructed to include these.

Liabilities.—Here should be listed the mortgage, notes, and accounts payable. When these are added and their sum subtracted from the total assets, the balance is known as the "net worth."

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[1] Circular No. 44 of the Bureau of Plant Industry, entitled "Minor Articles of Farm Equipment," gives a very complete list of small tools found on farms.

[2] See Circular No. 67, entitled, "Measuring Hay in Ricks and Stacks."

HOUSEHOLD GOODS, ETC.

It must be understood that in the farm inventory no mention is to be made of the household furnishings or personal effects, as only the farm and its accessories are to be considered. While it is true that the dwelling has been included in the value of the farm, this is necessary, as it is a part of the real estate and would be included if the place were sold.

It will be noted in the inventory form shown in Table I that there is a column for the values on April 1 of one year and another for the corresponding values of the same items the following year. This idea is a convenient one and the idea can be carried further by providing an inventory book with columns for a number of years.

DETERMINING VALUES.

There are many and varied opinions on the question of how farm values should be determined. It has been suggested that the inventory value of a farm should be its original cost to its present owner. The objection to this is that one of the important purposes of making an inventory is to ascertain the actual worth of the property, which may be considerably greater, or in some cases much less, than its original cost. Then again, the farm may have been inherited by its present owner, and therefore may have cost him nothing.

Unusually high or speculative values should not be used, as they do not represent facts and only tend to deceive and mislead. The danger of overvaluing should be carefully guarded against, as no good can come from it, while considerable harm may. A good rule is to place the value of almost all the various permanent property items at what they could be sold for, not at forced sale, but under normal conditions. This method may seem incorrect in the case of real estate and permanent live stock, in that some may think it calculated to give too low values. The danger of placing values too low is not nearly so great as placing them too high and then finding, at some future date, that conditions did not warrant so high valuations. The exceptions to valuations by this rule are explained hereinafter.

When the inventory value of the farm land is advanced to keep pace with advancing land values, and not because improvements have been made in the course of the farm business, such increase should not be allowed to swell the farm profits for the year. In such cases care should be taken to exclude this appreciation in determining the farm profit, and this is best accomplished at the time the records are finally summarized as shown in Table X by deducting it from the ascertained net farm profit figure ($202.25 in the table).

In appraising the values of market live stock and farm produce, market price should be used, always deducting therefrom a sum

sufficient to cover the cost of getting to market. Inasmuch as market prices vary from year to year these values may be low one year and high the next, or the opposite. It is impossible to ignore this sometimes troublesome fluctuation, but, in ordinary times, market changes are not extraordinarily great from one year to the same date a year later. However, it must be remembered that a man's worth does actually fluctuate with the market value of the property he owns. If no attention is given to market values a serious source of inaccuracy may be written into the records.

Purchased feeds and farm supplies should be valued at cost.

DEPRECIATION.

In the case of the property composing the permanent equipment of the farm or "farm plant," as it is sometimes called, just as factories are sometimes known as "manufacturing plants," the factor of depreciation must be considered. Few accurate figures as to depreciation of farm property are available. It is quite difficult accurately to gauge depreciation, since it depends on a number of factors which vary greatly in different sections of the country and even in the same section. A few suggestions will be made as to some of the principles affecting depreciation rates, but good judgment must be used, in every case, in applying them to definite conditions.

For ordinary frame farm buildings it is generally considered that 2 to 3 per cent per year will be a fair allowance. Brick, stone, tile, and concrete structures will not take so high a rate. Poorly built frame sheds and the like will require considerably higher allowances. It sometimes happens that the increase in farm-land values from year to year will more than offset the depreciation of buildings and other improvements. In other cases the growth of timber in a good farm woodlot will have a tendency to offset this loss. Of course, if farm cost accounts are being carried on, each of these increases would have to be shown as a separate gain, and depreciation as a loss, but in farm bookkeeping, which considers the whole farm as a unit, the loss and gain may simply offset each other. On many farms buildings are kept in such good repair that they depreciate very slowly, and the amount spent for maintenance each year may be considered as eliminating the necessity of allowing for depreciation, as the buildings, under these circumstances, will last almost indefinitely. Cases are not uncommon where frame buildings are in excellent shape after more than 100 years' use. This is also true in a measure of fences when built of the very best materials and properly maintained.

In the case of tile drains, the rate of depreciation may vary from a rather high to a very low rate, according to the quality of the tile, the care used in laying it, and in keeping the outlets open and protected from animals.

In valuing machinery and tools, market values do not consistently apply. It is well known that a machine depreciates in market value very rapidly the first year, or even the first month, used. That is, a mowing machine may cost $75, but if it is used a month it becomes a secondhand machine, and it may be difficult to realize $50 on it. The farmer buying new equipment may find the market value or sale price greatly reduced after one year's use, while the second and third year the value may not be further reduced appreciably. In other words, a mower that has been in use three years may sell for almost as much as one that has been used but three months. As the machinery equipment is part of the farm "plant," or the property necessary to the carrying on of the farm business, it should be valued at its value to the farm, and this value is not determined by secondhand machinery prices. It therefore becomes necessary to use somewhat arbitrary means of valuation. By dividing the original cost by the probable useful years of life an annual depreciation factor is determined, and by reducing the value each year by the amount of this factor the inventory value will be gradually decreased until at last it is entirely extinguished. By correcting this factor from time to time, this method will prove satisfactory in the general run of cases.

The number of years of useful life will depend on many factors. Among these are extent of use, climate, kind of machine, soil type, topography, and the care taken of the machines. Some farmers who take good care of their machines make them last much longer than machines owned by those who do not take care of them.

The rate of depreciation on farm machinery has been variously estimated at from 6 to 15 per cent. Where machinery is inventoried and valued in groups, or as a whole, the problem is simpler, but this method can not claim any great degree of accuracy. Mr. Grant G. Hitchings, a practical New York farmer who has given much attention to bookkeeping, uses the following method: He deducts 10 per cent from the first inventory value and to the remainder adds the cost of all new items bought during the year. Thus he figures the second inventory value. For instance, if his machinery was worth $825 at the beginning of the year and during the year a new mower and hay rake were purchased for $115, he would figure his machinery value for the inventory at the end of the year as follows:

Inventory value at the beginning of the year	$825.00
Less 10 per cent	82.50
Remainder	742.50
Add cost of new machinery purchased	115.00
Inventory value at the end of the year	857.50

This method can not be expected to give a precise inventory value for all years, but when used over a long period the values should be fairly accurate. If it is found by experience that the rate is obviously too high or too low, a new inventory may be taken any year and the total amount corrected. This method is a practical way of handling the valuation of machinery but is not to be recommended in all cases, especially if cost accounts are being conducted.

The depreciation rates of the permanent live-stock herds should be based on careful appraisals made at inventory time each year. It is true that these appraisals will be based, in part at least, on estimated depreciation, which in turn will be based on original cost, estimated length of useful life, and sale value when useful or productive life is over. U. S. Department of Agriculture Bulletin 413 gives useful information on these points as to work horses and certain breeds of dairy cattle.

APPRECIATION.

Certain classes of farm property appreciate constantly up to a certain point. Such a piece of property is a good farm woodlot. The young stock of the permanent herds come also within this category, but the methods of valuation already explained cover these.

When growing orchards and other semipermanent crops are occupying part of the farm land, the increased value of the land carrying these must be taken into consideration when valuing the farm, and as these crops grow and approach maturity, thereby increasing in value year by year, it is necessary to take into account these increasing values at inventory time each year. This should never be based on estimated returns, as working on such a basis would be what is known as "overcapitalizing," or, as it is commonly called in the financial world, "watering stock." People are prone to wax enthusiastic over anticipation of profits from their ventures, and the result is likely to be "inflated" or highly overestimated values. It is best to stick to conservatism, and to base these values on the actual first cost of the plants or trees, plus cost of planting, and to increase the value from year to year, in proportion to the cost of maintenance until the period of paying crops is reached. They may be carried at a stationary value during the height of the cropping life, and then, as their fruitfulness begins to wane, the value may be gradually reduced and finally extinguished when the land is again cleared and put to other uses.

THE VALUATION OF FARM PRODUCTS AT COST OR MARKET VALUE; WHICH?

The rules given in the foregoing discussion on valuations represent, in a general way, the opinion of the American authorities on farm accounts. Some accounting authorities, however, notably

certain English farm accountants, claim that to base appraisals of farm products not yet sold on market value is wrong in principle, and that, as in commercial accounting, so in farm accounting, *cost* and not *market value* should be the governing principle in all valuations of such farm property.

It is unnecessary to go into a lengthy discussion here as to the merits of these differing opinions, but inasmuch as they do exist it is well to explain them briefly. The first, holding for *market value at the farm*, is based on the fact that the farm produces staple articles, the market for which is practically always open and the demand therefore unlimited, and in consequence the profit is actually made when the articles are *produced* and not when *sold*. The second holds that no profit is made until the produce is sold, and, presumably, the money actually in hand.

There is one feature that must be mentioned which supporters of the second idea have entirely overlooked. The farmer's "turnover" period (length of time necessary for realization on his operations) is at least an entire year, and at his discretion he may make it longer. Conditions of market may cause him to withhold his products from sale from the year in which they are produced to a subsequent year, and inventory valuations made at *cost* would result in showing an entirely erroneous state of affairs, in that the profits of the first year might be entirely eliminated and those of the second year doubled. To illustrate this point, let it be supposed that a farmer prepares his farm land, plants and harvests a crop of corn, and, because of market conditions, holds this crop for some time and finally sells it along with the crop of the succeeding year. As the costs of this crop have all been included in the accounts of the year in which raised, it does not appear justifiable to credit all the profit thereon to the year in which sold. In fact, to the farmer who wants to know how one year's operations compare with another, such a practice would undoubtedly seem absurd, as, in fact, it is.

"It may very properly be asked, what is the chief object and incentive of the farmer in keeping records and accounts? Is it merely for the academic purpose of securing abstract facts, or is it to furnish him with facts that will enable him to discern the practical result of his operations, year by year, and be of value to him in bettering his affairs?"[1] Certainly there can be but one answer, as far as practical opinion is concerned.

When the inventory is made at the end of the year, one of its important uses is to enable its owner to know what *that particular year*, and not some future year, has produced in the way of profit.

Valuations based on market value at the farm will give this information; valuations based on cost will not.

[1] James Wyllie, Lecturer, West of Scotland Agricultural College.

TIME TO TAKE AN INVENTORY.

The best time to take an inventory varies in different parts of the country, depending upon region and business practice. In the Northern and Eastern States perhaps the best date is March 1 or April 1; in the South an earlier date would probably fit conditions better. In the Central States March 1 is undoubtedly the best time, as all farm business transactions in that region date therefrom, while in the northeastern part of the country the farmers' usual date of reckoning is April 1. This ordinarily corresponds with the date on which tenants change farms. On specialized farms special dates may be most convenient. Fruit farms, truck farms, and the like find January 1 a satisfactory date. On poultry farms September 1 or October 1 is a good date, because the new poultry year usually starts at the time the hens are placed in winter quarters. Thus it will be seen that the most convenient time for taking an inventory varies with conditions.

Upon the completion of the inventory the most important of the year's records is finished, for, as already stated, the inventory is the basis on which is erected the future system of records. Without an inventory it is impossible for any business man to know definitely what he is gaining or losing, but having a good clear inventory of all his property he is prepared to keep such further records as will give him the information he desires at the end of the year.

THE FARM INVENTORY AS A "BALANCE SHEET."

The "balance sheet" is the form of statement used in the business world to set forth the standing of a commercial firm. In the business world the uses of the balance sheet are very important, as a great deal depends upon its showing. One of its uses is as a basis of credit. When a dealer wishes to establish a line of credit with a bank or a wholesale house, it is the usual custom to forward for inspection his latest balance sheet, duly authenticated.

Of recent years companies have been formed which examine the balance sheets of business firms and "rate" them—that is, fix their standing from a credit viewpoint. These "credit ratings," as they are called, are then published annually in book form, and they constitute a most important source of information on business credits.

This method of rating credits has proved a great convenience to business men, both those asking credit and those from whom credit is asked. Farmers have never had the benefit heretofore of this convenience. Credit men have come to believe, with every reason, that few, if any, farmers can submit a statement or "balance sheet" that will satisfactorily serve as a basis for the granting of a line of credit. Accordingly, farmers have had to depend for needed credit on local

firms, no matter how inadequate their facilities or how unsatisfactory their terms and interest rates. This state of affairs was one of the factors that resulted in the establishment of farm-loan banks.

Although it is not the purpose in this bulletin to go into all the details, and sometimes complexities, involved in the preparation, auditing, and certification of commercial balance sheets, it is thought proper, in view of the foregoing facts, to set forth clearly how farmers who have made good inventories have all the essential data from which to construct a balance sheet should occasion demand it. A complete farm inventory contains all the elements of a balance sheet, except that the various capital elements (investment, surplus, reserves, undivided profits, etc.) of the balance sheet are embraced within the single item, heretofore termed "net worth" in the inventory, and that certain accrued and unexpired expense items of minor import may have been omitted. The arrangement is, however, considerably different.

As an example of a balance sheet constructed from a farm inventory, Table II has been prepared from the 1919 values of the inventory given in Table I. As will be seen, the arrangement differs from that of the inventory and many of the details are omitted, but the salient factors are there and arranged in one of the accepted commercial balance-sheet forms.

The assets are listed first, and are divided into current assets (or those readily available) in the order of their "liquidity" (or quickness of availability in case of necessity) and fixed assets in the order of their "fixity." It will be noticed that all the property that goes to make up the farm "plant" or permanent equipment necessary to carry on the business in its customary channels is listed under the fixed assets.

The liabilities are arranged according to the order in which they will have to be paid or "liquidated." The difference between the total assets and total liabilities, heretofore designated "net worth," represents the amount invested plus the net amount of profits (or minus the net losses) not yet withdrawn for personal use.

TABLE II.—*Sample of a farm balance sheet prepared from a complete farm inventory.*

BALANCE SHEET.

JOHN DOE, *Doeville, Va.*, APRIL 1, 1919.

ASSETS.

Current assets:		
Cash on hand and in bank	$195.49	
Accounts receivable	68.00	
Grain on hand (per inventory)	495.60	
Hay on hand (per inventory)	300.00	
Market live stock (per inventory)	144.00	
Farm supplies (deferred expense)	57.45	
Total current assets		$1,260.54

Fixed assets (present values):		
Land and buildings	$9,600.00	
Machinery and tools	1,498.25	
Work horses	560.00	
Productive live-stock herds	909.00	
Total fixed assets		$12,567.25
Total assets		13,827.79
LIABILITIES.		
Accounts payable	$200.00	
Mortgage payable	4,000.00	
Total liabilities		4,200.00
CAPITAL.		
Capital invested plus undivided profits		9,627.79
Total liabilities and capital		13,827.79

FINANCIAL ACCOUNTS.

In starting to keep a record of cash received and paid out it is of the utmost importance to know definitely just what records are wanted.

WHAT ACCOUNTS TO KEEP.

An adequate schedule of the headings under which it is desired that the farm receipts and expenditures shall be segregated is an essential step to successful farm bookkeeping. A proper "classification of accounts," as this step is designated in commercial accounting, is in line with the first essential requisite for bookkeeping, namely, "to know what accounts to keep."

Among accounting authorities there are several well-defined systems of classifying accounts, but not all these need be taken up here. The classification presented in Table III as a suggestion for farm bookkeeping purposes is based on farm experience and is also in line with accounting authorities.

TABLE III.—*A suggested classification for accounts to be used in farm bookkeeping.*

ASSET ACCOUNTS.	PROPRIETORSHIP ACCOUNTS.
Cash in bank.	Invested:
Petty cash (pocket change, etc.).	Capital invested.
Accounts receivable.	Proprietor's personal.
Notes receivable.	Proprietor's household.
LIABILITY ACCOUNTS.	Purchases:
Accounts payable.	Live stock purchased.
Notes payable.	Machinery and tools purchased.
Mortgages payable.	Building materials for permanent improvements.

PROPRIETORSHIP ACCOUNTS—Continued.

Modern improvements purchased.
Income:
- Crop sales.
- Crop product sales.
- Live stock sales.
- Live stock product sales.
- Miscellaneous sales.
- Incidental income.

Expense:
- Labor.
- Purchased feed.

PROPRIETORSHIP ACCOUNTS—Continued.

Expense—Continued.
- Live stock expense.
- Crop supplies.
- Maintenance of machinery and tools.
- Maintenance of buildings and other land improvements.
- Insurance and taxes.
- Interest.
- Incidentals.
- Depreciation.

This classification is very elastic and may be expanded or contracted at will, when conditions seem to demand it, by subdividing or combining the account headings presented. For instance, if expansion seems desirable, crop sales account may be subdivided so as to include a separate account for each crop sold, live stock expense account may be subdivided into veterinary expense, shipping expense, etc., and so on through the entire list.

If, on the other hand, fewer accounts are thought to be sufficient, the classification may be contracted by combining all the sales into one account.

This process of condensation carried out fully might finally result in a classification somewhat as follows:

Asset accounts:
- Cash.
- Accounts and notes receivable.
- Inventories.

Liability accounts:
- Accounts, notes, and mortgages payable.

Proprietorship accounts:
- Investment and withdrawal.
- Purchases (live stock, improvements, equipment).
- Income (sales and incidentals).
- Expense.

MIXED ACCOUNTS.

It is very necessary in accounting that "mixed" accounts shall be avoided, since they require analysis to interpret properly their meaning. By "mixed accounts" are meant those which carry items of asset or liability values along with those of income or expense. An example of a mixed account is given in Table IV. Here the account with "dairy" includes asset values (value of the dairy herd), income values (sales of dairy products), and expense values (cost of feed, etc.). Before the desired facts about the dairy enterprise can be ascertained, such an acount must be "analyzed" or separated into property values, income, and expense. If there had been three accounts headed "Dairy herd," "Dairy income," and

"Dairy expense," these three accounts would have set forth in their totals the distinct facts desired relative to this enterprise, without any study or analysis being necessary.

TABLE IV.—*Sample of a "mixed" account or account carrying more than one class of financial data. This account carries three distinct classes, namely, asset (a), income (i), and expense (e).*

CHARGES. DAIRY ACCOUNT. CREDITS.

Date.	Item.	Amount.		Date.	Item.	Amount.	
1918							
Jan. 1	Inventory of herd (a)	$2,250	00	Jan. 3	Check for milk (i)	$85	00
10	Feed, 1,000 lbs. (e)	28	00	14	Sold 2 veals (i)	36	70
16	Disinfectant, ½ gal. (e)		75	16	Sold feed bags (e)	1	00
20	Bought 2 cows (a)	256	00			122	70
28	Bought bull calf (a)	50	00		Balance	2,462	05
	Total for January	2,584	75		Total	2,584	75
Feb. 1	Balance brought down	2,462	05				

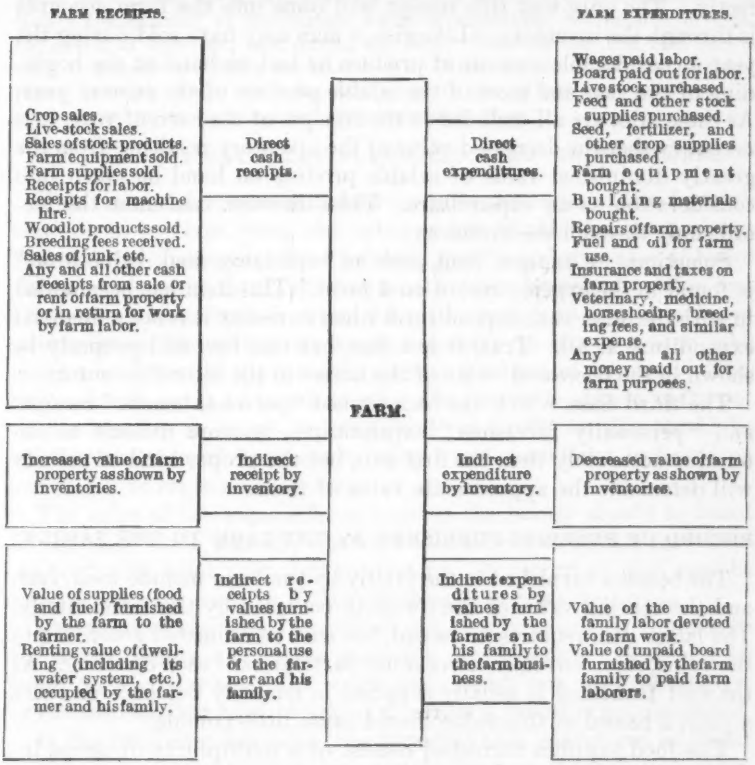
The totals for January, and the balance brought down on February 1, mean absolutely nothing as presented in this table. If the proper accounts had been kept the books would show directly and without the slightest analysis that the investment in the dairy herd stood at $2,556, the dairy receipts for January were $121.70, and the expenses $27.75 ($28.75, less $1 for feed bags sold). It is just as easy to "post" items to a detailed account as to an account where everything is lumped together, and each account carrying a definite set of facts tells its story at a glance.

It is therefore an important provision to avoid mixed accounts wherever possible. The classification of farm accounts exhibited in Table III contains no mixed accounts. Separate accounts with each crop or group of live stock may be carried, but these vary so much on different farms that no attempt has been made to indicate them. A system founded on the accounts shown here will permit the drawing off of a statement of balances (technically termed a "trial balance") at any time, which together with the inventory will present all the necessary facts without further analysis. Every man must suit himself in the accounts he intends to keep. If it is not thought advisable to start so many accounts, mixed accounts may be carried, but it is better that they be avoided.

THREE DISTINCT CLASSES OF FARM RECEIPTS AND EXPENDITURES.

It may be well, at this point, to explain clearly the three distinct ways income may come and expenses accrue in the farm business. This may be made clear by a study of the following diagram:

Diagram of farm receipts and farm expenditures.


FARM RECEIPTS.
FARM EXPENDITURES.
Crop sales.
Live-stock sales.
Sales of stock products.
Farm equipment sold.
Farm supplies sold.
Receipts for labor.
Receipts for machine hire.
Woodlot products sold.
Breeding fees received.
Sales of junk, etc.
Any and all other cash receipts from sale or rent of farm property or in return for work by farm labor.
Direct cash receipts.
Direct cash expenditures.
Wages paid labor.
Board paid out for labor.
Live stock purchased.
Feed and other stock supplies purchased.
Seed, fertilizer, and other crop supplies purchased.
Farm equipment bought.
Building materials bought.
Repairs of farm property.
Fuel and oil for farm use.
Insurance and taxes on farm property.
Veterinary, medicine, horseshoeing, breeding fees, and similar expense.
Any and all other money paid out for farm purposes.
FARM.
Increased value of farm property as shown by inventories.
Indirect receipt by inventory.
Indirect expenditure by inventory.
Decreased value of farm property as shown by inventories.
Value of supplies (food and fuel) furnished by the farm to the farmer.
Renting value of dwelling (including its water system, etc.) occupied by the farmer and his family.
Indirect receipts by values furnished by the farm to the personal use of the farmer and his family.
Indirect expenditures by values furnished by the farmer and his family to the farm business.
Value of the unpaid family labor devoted to farm work.
Value of unpaid board furnished by the farm family to paid farm laborers.

Here the farm is considered as the unit of the accounts, and the three distinct classes of receipts and expenditures, with the various items they embrace, are indicated. The three sources of receipts may be termed "cash," "property," and "personal benefit," while the expenditures may be classed as "cash," "property," and "personally furnished." The cash classes will be completed by considering as farm receipts all money received from sales of farm products, or rent of farm property, or for labor for others, and the money spent for everything bought for farm purposes as a farm expenditure.

The property items are covered by the increase (a receipt) or decrease (an expenditure) in the inventory at end of a year as compared with that at the beginning. A man may make improvements on his place, such as building a barn or putting in a system of tile drainage, and thereby greatly increase the value of his farm. As the cost of these improvements may be made up of farm labor and materials included in the farm expenditures, this increase represents a receipt just

the same as crops or live stock sold. It is, however, received indirectly. The only way this receipt will come into the farm accounts is through the inventory. Likewise, a man may have sold during the year a considerable amount of produce he had on hand at the beginning of the year and most of the salable produce of the current year. As these sales are all included in the receipts of the current year, it is necessary that the decreased value of the inventory resulting from the greatly diminished value of salable produce on hand be taken into consideration as an expenditure. This, likewise, can enter the records only through the inventory.

Sometimes an expense item, such as "one horse died, value $100," is found in the expense record on a farm. This item has been added in with the other cash expenditures when in reality it is not a financial expenditure at all. True, it is a loss, but this loss will properly be shown in the decreased value of the horses in the second inventory.

The third class, which has been termed "personal benefit" receipts and "personally furnished" expenditures, is more difficult to determine accurately than the first two, but the proper kind of records will determine the approximate value of these.

RECORD OF BENEFITS FURNISHED BY THE FARM TO THE FAMILY.[1]

The benefits furnished to the family by the farm include food, fuel, and the renting value of the dwelling occupied by the farm family. The latter item requires no record, but may be estimated according to the value, size, conveniences, or other particulars of each dwelling. As the fuel furnished is usually supplied in quantity but once or twice a year, a record of this value should cause little trouble.

The food supplies furnished consist of a multiplicity of items, including milk, butter, eggs, poultry, beef, lamb, pork, veal, fruit, vegetables (both green and dried), and honey. To record the value of all these as furnished may seem a somewhat hopeless task, but the work may be made much simpler than is supposed (see Farmers' Bulletin 964). It is not necessary for farm accounting purposes to keep a fully detailed list of these supplies, though it is often of value and interest to do so. This record should preferably be kept by the housekeeper, who should be provided with a good-sized book for this purpose, as the pages of small books are soon filled and require much carrying forward of subtotals. To quote from Farmers' Bulletin 964:

> It may seem difficult to make record of each bunch of beets, each head of lettuce, each quart of berries, and each quart of milk as taken from the garden or saved from the day's supply of milk. The task is not so arduous as it may seem, however. During the summer, when the farmer's wife is busy, she may

[1] Farmers' Bulletins 635, "What the Farm Contributes Directly to the Family Living," and 964, "Farm Household Accounts," will furnish valuable information on this subject.

not have time to do this every day, or, she may forget. This need not seriously affect the value of the record, since the average housekeeper can estimate very closely the quantity of the various kinds of vegetables, the number of eggs, the quarts of milk, etc., used during the week. Thus she can find time once a week or oftener and bring her record up to date. At the end of the year her record probably would be sufficiently accurate for all practical purposes. It may be well to lay stress on the more important items.

RECORD OF PERSONALLY FURNISHED FARM EXPENDITURES.

This class of farm expenditures includes the value of the farmer's time given to farm work, the value of the unpaid farm labor performed by the members of the farmer's family, and the value of board furnished to paid farm laborers by the farm household. The first of these can be estimated at the end of the year, and should be based primarily on the estimated wages necessary to secure a man who could adequately fill the farmer's place as worker and manager. This value should never be based on what the farmer is able to make out of his business in wages, interest, and net profit, as this would be another instance of "overcapitalizing" and would not be based on actual cost to replace his services.

The value of the unpaid farm labor of the family should be based on the same value, namely, what it would have cost to hire the workers to do the labor that they performed. A record of this may be set down once a week, or oftener if there is a great deal of it.

The value of the board furnished can best be stated by the month for month hands and by the week for day laborers. It should be based on what farmers who board their hands out with others pay, or the amount that must be added to wages if board is not furnished.

In the foregoing discussion the farm has been considered as a unit and, in no case, has the relation existing between the different enterprises on the farm been considered. Consequently the records that have just been explained will not show the profit or loss on each crop or class of stock, since they pertain to the farm as a whole and not to any individual department.

"BALANCING" THE CASH.

In order to make the cash account "balance," that is, to agree with the amount of cash on hand or in bank, record must be made of all items, and the periodical "balancing" of the cash account is a valuable check against omissions and erroneous entries. Inasmuch as the household items are usually bought along with those of the farm, they must in such cases necessarily be included in the records, but if means can be taken to keep them entirely separate from the farm accounts it will result in a saving of time and work in the keeping of the latter. By examination of the account books of eight farms it

was found that of all the cash transactions recorded, the items pertaining strictly to the farm formed 54.6 per cent, the personal items 22.1 per cent, and the household items 23.3 per cent. The average number per year of cash items entered on the books was 577, and of this number but 315 were farm items. Detailed household accounts are of great interest and distinct value, and it is not intended here to offer any discouragement to the keeping of them. The point is that they should, where conditions permit, be kept entirely separate from the farm records, or as nearly so as possible.

The only reason for keeping the household and personal items along with those of the farm is to permit the balancing of the cash account. They add work to farm bookkeeping and are not a part of the real farm records. If they can not be kept separate, it would seem best not to keep the household and personal items in detail, but to combine all these entries for each day into one item and, if desired, let the housekeeper keep the detailed record of them. All the items pertaining in any way to the farm business should be itemized carefully. An illustration of desirable and undesirable detail is given in the two examples following:

Illustration of combining items in entry of household and personal items; also of complete detail in entry of items pertaining to the farm.

COMPLETE AND DESIRABLE.

1919		Item.	Received.	Paid.
Sept.	29	Coal for thrashing, three-fourths ton, at $6		$4.50
		Household expense		.89
	30	Sold 2 tons hay of this year's crop, at $20	$40.00	
		Personal expense		4.55

Illustration of undesirable detail in entry of household and personal items; also of incomplete detail in entry of items pertaining to the farm.

INCOMPLETE AND UNDESIRABLE.

1919		Item.	Received.	Paid.
Sept.	29	Coal		$4.50
		2½ pounds beef		.45
		Bread		.20
		3 pounds rice, at 8 cents		.24
	30	Hay	$40.00	
		Cravat		.25
		Shoes		4.00
		Candy and peanuts		.30

An excellent way to keep the farm records entirely separate is to allow the housekeeper whatever sum may be necessary to cover the household expenses for a week or a month and enter this in the farm records as one item at the time it is paid.

PURCHASES AND SALES ON CREDIT.

Articles bought or sold on credit should not be entered in the cash accounts until the money is collected or paid, for if this is done there may sometimes slip in a duplicate entry of a single item. Of course, a memorandum should be made at the time of sale or purchase so that such items may not be overlooked. Such a memorandum will further be useful at the end of the year, as the list of accounts for the inventory can be made up from it. After the total cash receipts and expenditures have been found for the year, the amounts received or paid during the year on accounts owing or owed at the beginning of the year should be deducted, as these receipts and expenditures pertain to the previous year. Correspondingly, at the end of the year any accounts owed or owing should be added to the cash items in order that all the items actually pertaining to the current year may be included in its accounts (see Table X).

FORMS FOR KEEPING FINANCIAL RECORDS.

There are a number of methods for keeping farm financial records. A form well adapted for handling the cash records is known as a day-book form, and books with this ruling can be bought almost anywhere. It consists of a page ruled with double money columns, the left-hand one to be used for items and the right-hand one for totals. While this form is very simple and can be procured anywhere, there are various other forms, many of which are useful, and in many cases better than the one described. These will be described further along. While farm bookkeeping is not a question of forms, but rather of what accounts to keep and how to keep them, convenient forms are timesavers in the long run. However, the most carefully devised bookkeeping blanks will not show good farm records unless the person using them has a clear idea of the principles and of the purpose in view.

There are two methods of making the entries in the form described. The first, a method commonly used by many farmers, is to enter "receipts" on one page and "expenditures" on the opposite one. Table V illustrates how the record appears when kept in this manner. This is a simple, easy way to keep the records and, as such, it will prove satisfactory. If followed through to the end of the year it will give a complete record of all the cash transactions, but if one wishes to know the aggregate income from the sale of eggs or of milk it will be necessary to go through the year's records and pick out all the items of sales of these products and add them separately. In other words, the foregoing method gives the total receipts and expenditures, but does not classify them.

TABLE V.—*One method of keeping cash receipts and expenditures.*

1918.		RECEIPTS (left-hand page).		
Apr.	2	20 bushels potatoes, at 90c	$18.00	
	2	18 dozen eggs, at 41c	7.38	
	7	2 tons hay, at $22	44.00	
	7	1 cow to J. Brown	77.50	
	7	30 dozen eggs, at 40c	12.00	
	7	3 bushels seed potatoes, at $1.50	4.50	
				$163.38

1918.		EXPENDITURES (right-hand page).		
Apr.	2	1 ton cottonseed meal for dairy	$55.00	
	2	Strap for work harness	.35	
	2	Personal	2.25	
	2	Household	1.60	
	7	Garden seeds	8.00	
	7	Express on seeds	.85	
	7	2 milk pails	2.00	
	7	Household	.86	
	7	Repairing plow	1.20	
				$72.11

In order to ascertain what each farm department returns and each kind of expense amounts to for the year it becomes necessary to classify all the items under their respective headings. This is usually done in another book, known as a "ledger" in which one page is devoted to each heading under which it is desired to classify items, and the operation of classifying or transferring the items to their respective heads is known as "posting." At the end of the year the totals of each heading in the ledger can be taken off and a statement prepared. Table VI illustrates a classified statement of the receipts and expenditures as taken from a farm ledger.

TABLE VI.—*Illustrating a fully detailed summary statement of cash receipts and expenditures on a farm for a year.*

April 1, 1918, to March 31, 1919.

RECEIPTS (CASH).

Farm receipts: :		
Accounts receivable (owing April 1, 1918):		
George Jones paid for corn		$42.00
Notes receivable (owing April 1, 1918):		
Harry Smith paid his note		100.00
Machinery and tools sold		26.90
Forge	$4.65	
Bolster springs	4.00	
Horse collars (3)	8.00	
Junk machinery	5.65	
Crocks, 1-gal. (46)	4.60	

Farm receipts—Continued.		
Buildings supplies sold		$11.89
Shingles (5 bundles)	$7.50	
Nails (60 pounds)	3.99	
Blind hanger	.40	
Work stock sold, 1 horse		35.00
Permanent live stock sold, 1 sow		56.00
Crop sales		1,236.33
Hay (24 tons)	625.50	
Wheat (159 bushels)	333.73	
Clover seed	258.30	
Seed corn	4.20	
Apples	14.60	
Crop product sales (apple butter)		77.50
Live stock sales		212.33
Steer (1,080 pounds at 9 cents)	97.20	
Hogs (2) (580 pounds at 15 cents)	87.00	
Pigs (2)	12.00	
Poultry	16.13	
Live-stock product sales		394.29
Beef (1) (825 pounds; 17.3 cents average)	142.89	
Hide, tallow, and pluck	15.17	
Butter (90 pounds; 44½ cents average)	40.01	
Hog skins (2)	2.00	
Eggs (423½ dozen; 46 cents average)	194.22	
Miscellaneous sales, (muskrat skins)		22.66
Incidental income		20.50
For use of horse	18.00	
For outside labor	1.50	
For rent of tedder	1.00	
Total farm receipts (in cash)		2,235.40
Personal receipts:		
Interest on Liberty bonds	10.00	
Jury fees	4.00	
Total personal receipts		14.00
Total receipts (cash)		2,249.40

EXPENDITURES (CASH).

Farm expenditures:		
Real estate improvement supplies		$429.82
Drain tile, including freight	$272.87	
Use of State ditcher	138.80	
Fencing and gates	18.15	
New machinery and tools		66.30
One-horse wagon	60.00	
Hog trough, metal	4.80	
Shovel	1.50	
Permanent live-stock purchases		165.00
Heifer, two-year-old	55.00	
Bull calf for raising	10.00	
Brood sows (2)	100.00	

Farm expenditures—Continued.		
Market live-stock purchases		$104.00
Steer, two-year-old	$90.00	
Pigs (2)	14.00	
Labor		230.82
Purchased feed		87.08
Corn, ear (74 bushels, at 73 cents average)	54.10	
Oil meal (235 pounds, at $3.54 average)	8.32	
Tankage (100 pounds, at $6)	6.00	
Bran (400 pounds, at $3.50)	14.00	
Poultry feeds	4.66	
Live-stock expense		19.12
Veterinary	8.00	
Dairy salt (1½ barrels)	4.95	
Poultry grit, shell, and charcoal	2.75	
Freight on eggs	2.42	
Breeding fees	1.00	
Crop supplies		195.28
Acid phosphate (2 tons 16 per cent)	54.00	
Seed	78.38	
Lime (5 tons, at $6)	30.00	
Twine (50 pounds, at 25 cents)	12.50	
Thrashing bills	20.40	
Maintenance of machinery and tools		31.96
Repairs	8.14	
New parts	10.15	
Fuel and oil	13.67	
Maintenance of buildings and other land improvements		43.73
Lumber	21.20	
Nails and hardware	3.53	
Cement	4.00	
Carpenter and mason	15.00	
Insurance and taxes		104.23
Interest (on mortgage $200, other $5.60)		205.60
Incidentals		20.47
Total farm expenditures (in cash)		1,703.41
Personal and household expenditures		606.85
Total expenditures (cash)		2,310.26

The second method of making the entries in the record book is to carry the original entry direct to its account in the ledger without first entering it in the "daybook." By this method all items pertaining to the sale of milk and other dairy products will be entered in an account headed "Dairy sales," all items for the sale of eggs and chickens will come under the "Poultry" accounts, etc. This is known as a "direct entry" method or "classified daybook" system and is illustrated in Table VII. The main objection to this method is that it is practically impossible to keep the cash balance in agree-

ment with the record book, and "mixed" accounts are almost certain to result, as the table shows.

Some students of farm bookkeeping recommend carrying the inventory amounts into the ledger accounts, but it is much simpler and better not to do so. No object is to be gained by so doing, as the record is more handy to use in its original form than it would be spread through the ledger pages. Furthermore, in no class of entries are mistakes more likely to be made than in handling these amounts through the ledger accounts. It must always be remembered, however, that any information or interpretation desired from the accounts must always take into consideration both the accounts in the ledger and the inventories.

TABLE VII.—*Cash items entered direct to their respective accounts.*

DAIRY.

1918.		RECEIVED (right-hand page).		
Apr.	9	2 cows to C. Brown	$188.00	
	9	1 yearling to Smith	19.00	
	15	Milk and cream	114.25	
				$321.25

1918.		PAID (left-hand page).		
Apr.	2	1 ton cottonseed meal	$55.00	
	2	2 milk pails	2.00	
	10	1 cow from A. Johnson	107.50	
	10	One-half ton bran	15.50	
				$180.00

A third method for recording the financial items is similar in principle to the two already described, but is different in application. It consists of entering the items as in the first method described, with the difference that the pages are ruled in a number of columns and each item is entered in the column headed by the account name to which it pertains. As all the items are entered in proper sequence, it is possible to check them with the cash balance, even though they are classified under their respective headings. This kind of a record is known as a "special column" cashbook and the main objection to it is that unless a book of very wide pages is used it does not admit of many accounts. However, on most farms, only a few accounts are needed. Table VIII illustrates accounts kept by this means.

TABLE VIII.—*Form illustrating special-column cashbook; items entered direct to separate accounts.*

RECEIPTS.

1918.		Item.	Dairy.	Poultry.	Crops.	General.
Apr.	2	2 calves to Jones	$35.00	.....	.....	.....
	3	2 tons of hay to Brown	.....	.....	$44.00	.....
	4	10 dozen eggs, at 40 cents	.....	$4.00	.....	.....

TABLE VIII.—*Form illustrating special-column cashbook, etc.*—Continued.

EXPENDITURES.

Apr.	2	1 ton wheat bran	$40.00			
	2	10 bushels seed oats, at $1			$10.00	
	7	2 bags chicken wheat		$2.50		

A fourth system is known as the "bank book" or "check" method. To practice this method it is necessary that all the farm funds be passed through the bank account. When funds are deposited in the bank a duplicate deposit slip is made out, on the back of which is recorded the articles for which the cash was received. Likewise when checks are drawn the articles for which the money is expended are noted on the check-book stub, or special checks may be used bearing on their face a notation of the object for which drawn. This is a very simple scheme and has much to recommend it.

The duplicate deposit slips and check stubs, carefully preserved, form a complete financial record, and the records automatically agree with the cash balance. There is one inconvenience encountered in this method. There are many expenditures of a few cents here and there, and it is impracticable to draw a check for each of these petty amounts. There are several means of overcoming this difficulty. One is to open an account at the store for these petty items and draw a check periodically to pay for them. The items can then be classified on the check stub. Another means is to adopt what is known as the "petty cash" method. A small sum of money is set aside to pay these minor items and charged to a petty cash account. From this the little expenses are paid, and when the sum is depleted a check is drawn to cover the total of items paid out of it, classifying the items on its stub, and the check is then cashed and the money put back in the petty cash fund.

A fifth method is known as "the farm diary method" and consists of using a book supplying a separate page for the records of each day throughout the year. This method is thoroughly explained in Farmer's Bulletin 782 and will only be mentioned here. The main objection to it is that the records must be "posted" as described in the discussion of the first method given, but it has the considerable advantage of providing a definite system for the recording of all the miscellaneous happenings which are of interest and value.

No matter which method is decided on for keeping the cash records, the object is the same in every case, namely, to secure a complete detailed list of all the sources of revenue and all the things for which money is spent, with the amount under each head. Table VI has already illustrated such a detailed list and Table IX is presented to

illustrate how, if so much detail is not desired, the data may be summarized under more general headings. The fully detailed summary is, however, to be recommended.

TABLE IX.—*Illustrating a summary of cash receipts and expenditures on a farm for a year under general nondetailed headings.*

April 1, 1918, to March 31, 1919.

RECEIPTS (CASH).

Farm receipts:		
Accounts and notes receivable	$142.00	
Crop sales	1,236.33	
Crop-product sales	77.50	
Live-stock sales	303.33	
Live-stock-product sales	394.29	
Miscellaneous sales and other farm income	81.95	
Total farm receipts		$2,235.40
Personal receipts		14.00
Total receipts (cash)		2,249.40

EXPENDITURES (CASH).

Farm expenditures:		
Live-stock purchases	$269.00	
Real-estate improvement and maintenance	473.55	
Machinery purchases and maintenance	98.26	
Live-stock expense	106.20	
Crop expense	195.28	
Labor	230.82	
Miscellaneous farm expenditures	330.30	
Total farm expenditures		1,703.41
Household and personal expenditures		606.85
Total expenditures (cash)		2,310.26

CLOSING THE BOOKS.

"Closing the books," in the ordinary acceptance of the term, is the process of entering the balance of each ledger account on the lesser side of the account, bringing down equal totals on each side, and ruling the account off. The balances are then carried to a "profit and loss" account, if the ledger account ruled off is income or expense account, or brought down below the ruling as a new balance, if the account ruled off is an asset or liability account.

This process is usually stressed as very important by some students of farm bookkeeping. Often the inventory amounts are brought on the books just prior to starting to "close" them, and the farmer bookkeeper following this method soon finds himself floundering in a

maze of cross entries, balance transfers, and rulings bewildering even to many men more trained in the handling of figures than he.

No such process is necessary or advisable in simple farm bookkeeping. If the methods outlined in this bulletin are adhered to they will give all the information the most approved, detailed, and technically correct "closing" of the books will give, will present the information in just as interpretable form, and will be accomplished with considerably less work, worry, and confusion of detail. It is recommended, however, that the various ledger accounts be marked or checked off as their respective balances are transferred to the summary of receipts and expenditures (Tables VI and IX) in order that they may not inadvertently be included in the totals for the coming year.

DETERMINING NET FARM INCOME AND NET FARM PROFIT.

Having ascertained the total farm receipts and the total farm expenditures and the value of the interrelated items, the next thing is to determine the net farm income. The term "farm income" or preferably "net farm income" (as the receipts themselves are sometimes termed farm income) is used to denote the balance left after the total of farm expenditures is deducted from the total of farm receipts. Out of this balance, or the net farm income, must come a fair return for the farmer's labor and for the use of his capital, before any of it may be termed net profit. (See Table X.)

TABLE X.—*Illustration of method of determining net farm income and net farm profit from inventories and cash accounts, making due allowances for cash items not pertaining to the particular year and for all noncash, interrelated items between the farm and the family.*

INVENTORIES (PHYSICAL OR TANGIBLE ONLY).

	Value.			
	Apr. 1, 1918.	Apr. 1, 1919.	Increase.	Decrease.
Real estate	$9,600.00	$9,600.00	.....	.....
Live stock	1,185.00	1,613.00	$428.00	.....
Machinery and tools	1,633.50	1,498.25	.....	$135.25
Farm produce	648.00	795.60	147.60	.....
Purchased feeds and supplies	7.58	57.45	49.87	.....
Total	13,074.08	13,564.30	625.47	$135.25
Subtracting the lesser	.....	13,074.08	135.25	.....
Balance, net increase (a farm receipt)	.....	490.22	490.22	.....

FARM RECEIPTS.

Financial receipts:			
Cash receipts	$2,235.40		
Add value of current year sales not yet received in cash (see financial inventory)	68.00		
	2,303.40		
Subtract payment of last year's bills included in cash receipts (Table VI)	142.00		
Net financial receipts applicable to this year		$2,161.40	
Property receipts:			
Net increase in inventory (a property receipt)		490.22	
Personal benefit receipts:			
Value of food supplies furnished family	$439.74		
Value of fuel furnished family	58.00		
Renting value of farm dwelling	180.00		
Total personal benefit receipts		677.74	
Total farm receipts			$3,329.36

FARM EXPENDITURES.

Financial expenditures:			
Cash expenditures	$1,703.41		
Add amount of current year purchases not yet paid for in cash	200.00		
Total financial expenditures		1,903.41	
Property expenditures: (None; there was a net inventory increase; not a decrease.)			
Personally furnished expenditures:			
Value of family labor on farm work	$110.00		
Value of board furnished laborers	60.00		
Total personally furnished expenditures		170.00	
Total farm expenditures			2,073.41
Net farm income			1,255.95
Income earned by capital and labor:			
Interest at 5 per cent on total value of physical inventory, April 1, 1918		653.70	
Deduct interest paid on mortgage (see page 36)		200.00	
		453.70	
Value of farmer's labor (estimated)		600.00	
Total deduction for use of capital and labor			1,053.70
Net farm profit			202.25

The first step is to determine the net inventory increase or decrease, which is then carried below as a property receipt or a property expenditure, accordingly as it is found to be an increase or a decrease.

It will be noticed that in arriving at the inventory increase Table X does not include the accounts receivable, accounts payable, or cash on hand. This is because the money which is owed the farm has been added to the cash receipts, that which is owed by the farm to the cash expenditures, and the difference in cash on hand is reflected in

the difference between cash receipts and expenditures. Thus, while the complete inventory is properly used when there is no other record, as explained under Type I on page 8, only the *physical* inventory is used when figuring farm income and profit. The accounts payable and receivable are added to the receipts and expenditures because they really are such, and actually pertain to the year for which the statement is prepared. These points must be thoroughly grasped, and they are worthy of study.

The financial receipts and expenditures applicable to the year are determined by adjusting the cash receipts and expenditures by *taking out* all items included therein that do not rightfully pertain to this year, and by *adding in* all items of the year's business not yet settled for.

One item of this adjustment will require some explanation, namely, the deducting of the $200 interest paid on the mortgage. This is done to prevent duplication, for if interest on the entire value of the physical property is deducted in ascertaining the net farm profit and, in addition, the interest actually paid on the mortgage covering a part of the same property, a double interest charge is made on the part covered by the mortgage. The interest paid on the mortgage has already been included as a deduction from income, as it is included in the total farm expenditures.

The duplication is avoided, as shown in Table X, by deducting the amount of interest actually paid from the interest as calculated on the value of the physical assets. This process closely follows the facts, as the capital, in this case, on which interest charges should be figured is not the total value of the property, but the remainder, or "equity" as it is sometimes called, after the amount of the mortgage is deducted.

Table X is worthy of careful study by all farmers interested in accounts. Some men have the idea that their success is measured only by the increase in cash, cattle, crops, etc., on hand at the close of the year, others take into account the complete inventories, but very few consider the value of the items representing the interrelation between family and farm. Taking the data given in Table X, which are from actual farm records, the benefits received counteract in value the values furnished by the family and leave a balance of $507.74, which is as truly farm income as that received from the sale of produce to outsiders. If these items are not taken into consideration, the facts will not be presented in their true light, and consequently the accounts are not entirely successful and may be grossly misleading. The first, last, and only object of records should be to present the facts, all the facts, and nothing but the facts as closely as possible.

When the farmer determines the facts of his year's operations in the manner exemplified in Table X, he has data that will permit a

comparison of his lot in life with that of the city dweller working for a salary and with that of the city business man. His data, summarized in this way, will allow him to study his own business from the correct viewpoint.

INTERPRETATION AND USE OF FARM ACCOUNTS.

In the foregoing pages are outlined the reasons for farm bookkeeping, and methods and forms are suggested for bookkeeping on ordinary farms. The question arises, "How can the information gained by these records be applied to the various phases of the farm business?" Time and energy spent in keeping accounts are absolutely wasted unless an intelligent use is made of them. Moreover, one must not suppose that many records are needed before any information of value can be gleaned from them. It is surprising what useful information can be secured from a few simple records. It is even more surprising, however, what false interpretations can be drawn from a set of farm accounts by one who does not understand their real meaning. The information to be gained from interpretation of the results will be a matter of the requirements of each individual, but it ordinarily falls in one of the several groups which will now be illustrated.

WHAT HAS BECOME OF THIS NET FARM INCOME?

That is a question most commonly asked by farmers when their records show that their farm income has been larger than they had any idea of. In the case set forth in Table X this very question was asked, and answered as follows:

Net farm income (i. e., the amount out of which must come the household and personal expenses and the progress, financially, of the farmer)		$1,455.95
Add any personal income (see Table VI)		14.00
Total income available		1,469.95
Household and personal expenses:		
Cash (see Table VI)	$606.85	
Supplies and renting value from farm	677.74	
Gross household and personal expense	1,284.59	
Value of board and family labor (deduct)	170.00	
Net household and personal expense		1,114.59
Interest actually paid on mortgage		200.00
Actual financial progress (see Table I)		155.36
Total income accounted for		1,469.95

This statement clearly answers the natural question above. By referring to page 9 it will be seen that this is the computation there

given, except that it is reversed, and that the interest paid on the farm mortgage does not enter into it.

LABOR INCOME AND EFFICIENCY FACTORS.

The question that naturally arises next is: "How do results on my farm compare with those of other farmers?" The method developed by farm economists for these comparisons involves the relation of farm "labor incomes" to certain elements of management which are termed "efficiency factors." Labor income is that part of the net farm income left after allowing for interest on investment; it is a term used by farm economists to represent the total amount the farmer receives for his labor and managerial ability as a farm operator. This labor income can be readily determined from a statement like Table X by adding the estimate of the value of the farmer's services ($600) to the net farm profit ($202.25). If there should be a net farm loss, instead of a profit, the amount of the loss should be deducted from the estimated value of the farmer's services. If the loss is larger than this estimate, the latter should be deducted from this loss. In this case there would be what is termed a "minus labor income," which means that the year's results have not even paid the proper interest on the investment by the amount of the minus labor income.

This term, "labor income," is of value to the economist in studying the relative profitableness of different farms as related to the average farm, the better farms, and the poorer. It is not generally used in farm bookkeeping, as here only a single farm is being studied by its operator. If it is desired to compare one's labor income with those in published data on farm economics, it can be determined as above explained.

For a study of all the efficiency factors that may be compared, the reader is referred to the list of publications in the back of this bulletin. Some of these that may be mentioned here are: Proportion of capital invested in each kind of farm property, proportion of income derived from various sources, income per cow, per brood sow, or per acre of crops, acres of crops per man and per work animal.

COMPARISON OF FARM PROFITS WITH BUSINESS PROFITS.

Another comparison that may be useful is to compare one's profits with those of some business or corporation in which one has a part interest or with which he is familiar. Many men who have taken up farming after business careers will find it interesting to compare results. This is usually done on a percentage basis. The merchant sizes up his profits on the basis of the percentage they are of the total sales, the corporation's profits are reflected in terms of rate of dividends and surplus increase as related to the total capital. For

the farmer who may wish to make such comparisons the following suggestions are offered:

To find the percentage of profits on the business done, proceed as follows, referring to Table X:

If the food and fuel furnished the family have been charged in at market value at the farm, as they should be, the value of these should be added to the financial receipts. This gives the total business done. Find the sum of the net farm profit and the interest on investment. This gives the business profits as understood by the merchant, who usually allows himself a salary, but does not charge in interest as a business expense. Find what per cent the business profit is of the total business and the rate of profit on business done is the resulting figure. Thus:

> $2,161.40 plus $497.74 equals $2,659.14; the total business done.
> $202.25 plus $653.70 equals $855.95; the profit on business done.
> 856 divided by 2,659 equals 0.32 or 32 per cent, rate of profit.

To find the relation the profits bear to the total capital, it is only necessary to ascertain what the capital is, as the total profits are already worked out. It is important in making this comparison that only the actual capital be used. To find this the amount of the mortgage must be deducted and, as interest actually paid thereon has not been included in expenses, it must now be included (as we are considering net capital, not gross) just as a corporation includes in its expenses the interest on its bonds. This may be done as follows, referring to Table X and previous computations:

> $855.95 less $200 (interest on mortgage) equals $655.95, which is the total profit from a corporation standpoint.
> Total capital $13,074.08 less mortgage $4,000 equals $9,074.08, or net capital (that is, capital from the corporation standpoint).
> 656 divided by 9,074 equals 0.072, or 7.2 per cent profit on capital.

It must be understood that these are not presented as samples of profits that the average farmer receives, but simply as illustrations of methods. While the accounting figures exhibited throughout this bulletin are based on actual farm figures, they are taken from a period of war conditions and are therefore not typical in any sense.

CONCLUSION.

As already stated, no attempt has been made in the foregoing pages to treat of the subject of cost accounting. It has been the aim rather to deal with as simple a record as possible and at the same time have the results of sufficient value to be of use to the farmer. The trained agricultural student or the business-college graduate will no doubt desire a more detailed system than has been outlined here, and in this desire he is perfectly justified. But the average farmer is not a trained accountant, and the very nature

of his work is such that it is hard for him to do clerical work. After being in the field all day, or out in a cold, biting wind, it requires considerable exertion to write up a set of books in the evening. The farmer is trained to do physical work, and, although he is usually intelligent and capable when it comes to deciding important matters, it is often difficult for him to do clerical work of this character. When physically tired it is doubly difficult to do such work as adding a column of figures.

Farm bookkeeping is a matter of adapting simple methods to the farmer's needs. It is not a question of forms or having the accounts on the right side of the page or of having them balanced in a certain way, but it is a question of a correct knowledge of principles which will lead to an understanding of the facts as they exist on the particular farm in question.

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